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**BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA**

TECHNICAL MEMORANDUM

**SITE-SPECIFIC BACKGROUND METALS CONCENTRATIONS
PARCEL C**

To: Mr. Brian Mossman
Boeing Realty Corporation
3855 Lakewood Blvd.
Building 1A MC D001-0097
Long Beach, CA 90846

From: Haley & Aldrich, Inc.

Date: January 4, 2002

Re: Parcel C Site-Specific Background Metals Concentrations, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California

This technical memorandum has been prepared by Haley & Aldrich, Inc. to document the derivation of site-specific background metals concentrations in soil at Parcel C of the Boeing Realty Corporation (BRC) Former C-6 Facility in Los Angeles, California (subject site).

PURPOSE

The site-specific background metals concentrations will be used to assess if metals should be considered chemicals of potential concern (COPC) in the risk assessment being conducted for various exposure areas within the subject site.

SUMMARY OF DERIVATION METHODOLOGY

As indicated in the November 29, 2000, document entitled *Risk Assessment Work Plan, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California* (RAWP), site-specific background metals concentrations in soil were derived following the methodology described in the February 1997, California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) document entitled *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities, Final Policy*. Initially, a preliminary facility-specific metals data set comprised of soil sample data collected primarily from Parcels A, B, and D and from Parcel C was evaluated to develop preliminary facility-specific background metals concentrations used to derive field action levels (FALs) and soil import criteria for use on Parcel C. After obtaining additional metals data from Parcel C, Parcel C-specific (site-specific) background metals concentrations were identified from soil sample data collected from both industrial and non-industrial areas of the subject site. The site-specific data, herein identified as the "site-specific expanded metals data set", contains metals data from the subject site that were available prior to July 20, 2001. The previously identified preliminary facility-specific background metals concentrations

and background metals data obtained from the literature were used for comparison purposes during the identification of the site-specific background metals concentrations.

The minimum, average, and maximum metals concentrations of the preliminary facility-specific metals data set, the site-specific expanded data set, and the background metals concentrations reported in the literature for southern California and the western United States are presented in Table 1. The selected preliminary facility-specific background metals concentrations are also presented in Table 1.

Collection and Analysis of Preliminary Facility-specific Metals Data Set

The preliminary facility-specific metals data set contains between 152 and 459 metals concentrations measured from soil samples collected primarily in Parcels A, B, and D and from Parcel C of the BRC Former C-6 Facility. This data set includes samples collected in both industrial and non-industrial areas. Thus, due to the locations at which these samples were collected, a subset of the sample results may be considered to be within background metals concentrations and another subset may be considered to represent elevated concentrations due to facility-related impacts. Alternatively, the entire data set may be within background metals concentrations.

Collection and Analysis of Site-specific Expanded Metals Data Set

The site-specific expanded metals data set contains between 577 and 944 metals concentrations measured from soil samples collected from the subject site. This data set also includes samples collected in both industrial and non-industrial areas but within the subject site. Similarly, due to the locations at which these samples were collected, a subset of the sample results may be considered to be within background metals concentrations and another subset may be considered to represent elevated concentrations due to site-related impacts. The site-specific expanded data set for each metal was evaluated to assess the division of the two above-noted subsets, if it exists, and to identify the maximum background concentration of that metal within the site-specific expanded metals data set.

Statistical Evaluation of Both Data Sets

A statistical evaluation of the preliminary facility-specific metals data set is presented in Appendix A. This evaluation includes a general description of the data set for each metal including:

- Arithmetic mean and standard deviation of both untransformed and log-transformed concentrations
- Histogram of both untransformed and log-transformed concentrations
- Probability plot and associated correlation coefficient of both untransformed and log-transformed concentrations

A statistical evaluation of the site-specific expanded metals data set is presented in Appendix B. This evaluation includes the following data for each metal:

- Frequency of detection
- Range of detected values
- Range of sample quantitation limits
- D'Agostino's test of normality result for both untransformed and log-transformed

- Arithmetic mean and standard deviation of both untransformed and log-transformed concentrations
- Histogram of both untransformed and log-transformed concentrations
- Probability plot and associated correlation coefficient of both untransformed and log-transformed concentrations

Setting of Site-specific Background Metals Concentrations

In accordance with the February 1997 DTSC methodology, since the site-specific expanded metals data set is relatively large, the apparent point-of-departure or maximum background metals data concentration within the site-specific expanded metals data set was selected as the site-specific background metals concentration to be used in the DTSC comparison test. Where two data populations were identified in the probability plot as contributing to the site-specific expanded metals data set, the population closest to the origin (i.e., less than the point of departure) was selected as the background metals population for conducting the DTSC-recommended Wilcoxon rank sum test.

A summary of how the maximum site-specific background metals concentrations were selected is presented below. First, the histograms and probability plots of the site-specific expanded metals data set were reviewed for each metal to assess whether the untransformed or log-transformed data best resemble a normal distribution. A normal distribution is depicted as a bell-shaped curve on a histogram, and as a straight line on a probability plot. Once a decision was made regarding which data set was most normal, the probability plot for the associated data set was reviewed to identify the point-of-departure. The point-of-departure is defined as the point at which the background metals population (closest to the origin) diverges from the non-background (impacted) population.

For some metals, a point-of-departure was not evident in the probability plots. In these cases, the maximum background metals concentration and background metals population were selected as follows:

- If a probability plot does not indicate a point-of-departure and the maximum concentration of the site-specific expanded metals data set is within or near the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations, the maximum concentration of the site-specific expanded metals data set was selected as the maximum site-specific background metals concentration. For example, see Table 2 and selected probability plots in Appendix B for aluminum, antimony, mercury, nickel, silver, thallium, and vanadium. The selected site-specific background metals concentrations for aluminum, mercury, nickel, silver, thallium, and vanadium are within the concentration range created by the preliminary facility-specific background concentration and the maximum literature concentrations. The selected site-specific background concentration for antimony is near the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations for antimony.
- If a probability plot indicates that the point-of-departure is more a curve than a point (i.e., the background and impacted populations appear to overlap), a point on the low end of the curve was identified as a conservative initial point-of-departure. The initial point-of-departure was compared to both the preliminary facility-specific background metals concentration and the maximum literature concentrations to evaluate whether the initial point-of-departure appeared reasonable.

The initial point-of-departure was selected as the maximum site-specific background concentration if it is within or near the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations. For example, see Table 2 and the selected probability plot in Appendix B for beryllium, lead, and molybdenum.

To further confirm the validity of the background concentration selection process, the same comparison with both the preliminary facility-specific background metals concentration and maximum literature concentrations was made even when the point-of-departure appeared to be clear (a point instead of a curve). The associated value at the point-of-departure was considered to be reasonable if it is within or near the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations. For example, see Table 2 and the selected probability plots in Appendix B for arsenic, barium, cadmium, chromium, cobalt, copper, selenium, and zinc. The selected site-specific background concentration for each of these metals is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.

As for the preliminary facility-specific background metals concentrations, they were derived by identifying the point of departure after graphically placing the data in ascending concentration order. Histograms and probability plots were also created. The concentration plots, histograms, and probability plots of the preliminary facility-specific background metals data set are provided in Appendix A.

SITE-SPECIFIC BACKGROUND METALS CONCENTRATIONS IN SOIL

A list of the maximum site-specific background metals concentrations selected for use in the comparison test described in the February 1997 DTSC methodology, along with the rationale for selecting these values, is presented in Table 2. Each of these maximum site-specific background metals concentrations is also identified with an arrow on the selected probability plot presented in Appendix B.

Should you have any questions concerning the contents of this technical memorandum, please contact the undersigned at (619) 280-9210.

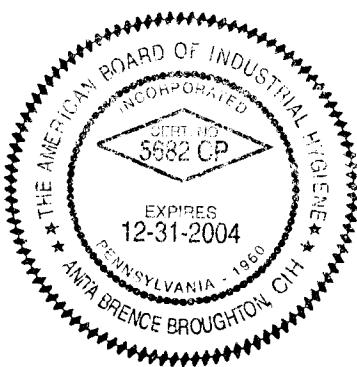
Sincerely yours,
HALEY & ALDRICH, INC.



Anita Broughton, REA, CIH
Risk Assessment Task Manager



Scott P. Zachary,
Project Manager



Attachments:

Table 1 - Summary of Preliminary Facility-specific Metals Data Set, Site-specific Expanded Metals Data Set, and Background Metals Concentrations Obtained from the Literature

Table 2 - Summary of Selected Site-specific Background Metals Concentrations

Appendix A - Statistical Evaluation for the Preliminary Facility-specific Metals Concentrations

Appendix B - Statistical Evaluation for the Site-specific Expanded Metals Data Set

Tables

Table 1

**Summary of Preliminary Facility-specific Metals Data Set, Site-specific Expanded Metals Data Set, and Background Metals Concentrations Obtained from the Literature
BRC Former C-6 Facility, Torrance, California**

Metals	Concentrations (mg/kg)											
	Source: USGS 1984 Western U.S.				Source: Kearney Foundation 1996 California (Agricultural Soils)				Source: Cal-EPA 1991 California (Agricultural Soils)			
	Minimum	Geometric Mean	Arithmetic Mean	Maximum	Minimum	Geometric Mean	Arithmetic Mean	Maximum	Minimum	Geometric Mean	Arithmetic Mean	Maximum
Source: Preliminary Facility-specific Metals Data BRC Former C-6 Facility												
Aluminum (Al)	5,000	58,000	74,000	>100,000	30,000	71,000	106,000	NE	8,720	21,500	35,500	27,000
Antimony (Sb)	<1	0.47	0.62	2.6	0.15	0.50	0.60	1.95	NE	NE	NE	NE
Arsenic (As)	<0.10	5.5	7.0	97	0.6	2.8	3.5	11.0	0.12	NR	1.90	0.2
Barium (Ba)	70	580	670	5,000	133	468	509	1,400	146	424	840	8
Beryllium (Be)	<1	0.68	0.97	15	0.25	1.14	1.28	2.70	NE	NE	974	23
Cadmium (Cd)	NE	NE	NE	NE	0.05	0.26	0.36	1.70	0.04	0.15	NR	560
Chromium (Cr)	3	41	56	2,000	23	76	122	1,579	23	76	122	1,579
Cobalt (Co)	<3	7.1	9.0	50	2.7	12.6	14.9	46.9	2.7	12.6	14.8	46.9
Copper (Cu)	2	21	27	300	9.1	24.0	28.7	96.4	9.9	33	42	164.6
Lead (Pb)	<10	17	20	700	12.4	21.7	23.9	97.1	8.5	13.8	14.5	28.7
Mercury (Hg)	<0.01	0.046	0.065	4.6	0.10	0.20	0.26	0.90	NE	NE	NR	189.4
Molybdenum (Mo)	<3	0.85	1.1	7	0.1	0.9	1.3	9.6	NE	NE	NR	25.7
Nickel (Ni)	<5	15	19	700	9	36	57	509	9	36	57	509
Selenium (Se)	<0.1	0.23	0.34	4.3	0.015	0.028	0.058	0.430	<0.1	0.26	0.36	1.3
Silver (Ag)	NE	NE	NE	NE	0.10	0.41	0.80	8.30	NE	NE	NR	0.43
Thallium (Tl)	2.4	9.1	9.8	31	5.3	13.8	15.7	36.2	NE	NE	NR	0.75
Vanadium (V)	7	70	88	500	39	101	112	288	39	102	112	288
Zinc (Zn)	10	55	65	2,100	88	145	149	236	13	123	139	354
									10.3	NR	NR	247.0
									4.7	44	120	64
									3.9	3.9	54.8	1460

NE = Not Evaluated

NR = Not Reported

(1) Minimum or maximum of detected concentrations

(2) Skewed due to elevated sample quantitation limits (SQLs)

USGS 1994: Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, U.S. Geological Survey

Professional Paper 1270 by H.T. Shackette and J.G. Boerngen (Western U.S. Data)

Kearney Foundation 1996: Background Concentrations of Trace and Major Elements in California Soils, Kearney Foundation of Soil

Science, Division of Agriculture and Natural Resources, University of California

Cal-EPA 1991: Background Levels of Trace Elements in Southern California Soils, Draft Annual Report, California

Environmental Protection Agency, Contract No. 89-T0081 by University of California, Riverside, California, April 1991 (Agricultural soils)

Cal-EPA 1992: Background Levels of Trace Elements in Southern California Soils, Draft Annual Report, California Environmental

Protection Agency, Contract No. 89-T0081 by University of California, Riverside, California, June 1992 (Composite samples from various depths)

Table 2

Summary of Selected Site-specific Background Metals Concentrations
Parcel C, BRC Former C-6 Facility, Torrance, California

Metals	Normal Data Set	Selected Maximum Background Concentration (mg/kg)	Rationale for Selection
Aluminum (Al)	Untransformed	43,300	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Antimony (Sb)	Log-transformed	3.1	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is near the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Arsenic (As)	Log-transformed	8.0	Point-of-departure is apparent. Since the point-of-departure is less than the maximum background concentrations presented in the literature and equal to the preliminary background concentration, it was selected as the maximum site-specific background concentration.
Barium (Ba)	Log-transformed	294	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Beryllium (Be)	Untransformed	0.56	Point-of-departure not apparent (more of a curve than a point). The concentration at the middle of the curve was chosen as the site-specific background concentration; since, this concentration is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Cadmium (Cd)	Log-transformed	1.0	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Chromium (Cr)	Log-transformed	48.5	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Cobalt (Co)	Log-transformed	20.0	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Copper (Cu)	Log-transformed	49.0	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Lead (Pb)	Log-transformed	7.2	Point-of-departure not apparent (more of a curve than a point). The concentration at the middle of the curve was chosen as the site-specific background concentration; since, this concentration is less than the preliminary background concentration and the maximum background concentrations presented in the literature.

Table 2

Summary of Selected Site-specific Background Metals Concentrations
Parcel C, BRC Former C-6 Facility, Torrance, California

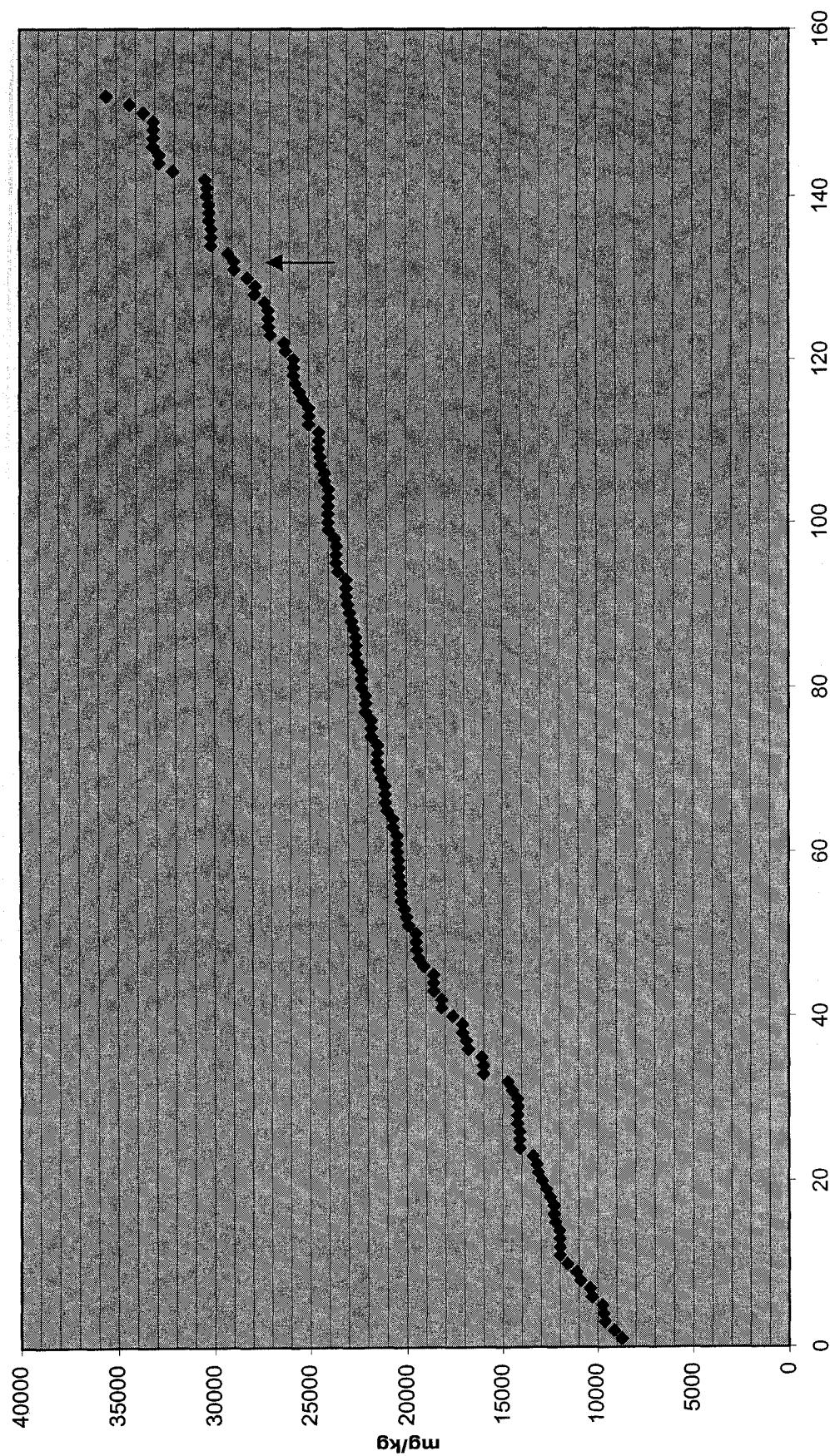
Mercury (Hg)	Log-transformed 0.48	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Molybdenum (Mo)	Log-transformed 2.7	Point-of-departure not apparent (more of a curve than a point). The concentration at the middle of the curve was chosen as the site-specific background concentration; since, this concentration is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Nickel (Ni)	Untransformed 37.4	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Selenium (Se)	Log-transformed 1.8	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Silver (Ag)	Log-transformed 1.6	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Thallium (Th)	Untransformed 2.4	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Vanadium (V)	Untransformed 93.0	Point-of-departure not apparent. The maximum concentration of the expanded data set appeared reasonable and was selected; since, it is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.
Zinc (Zn)	Log-transformed 114	Point-of-departure is apparent. The point-of-departure is within the concentration range created by the preliminary facility-specific background metals concentration and the maximum literature concentrations.

Appendix A

Appendix A

Statistical Evaluation for Preliminary Facility-specific Metals Concentrations

**Aluminum - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



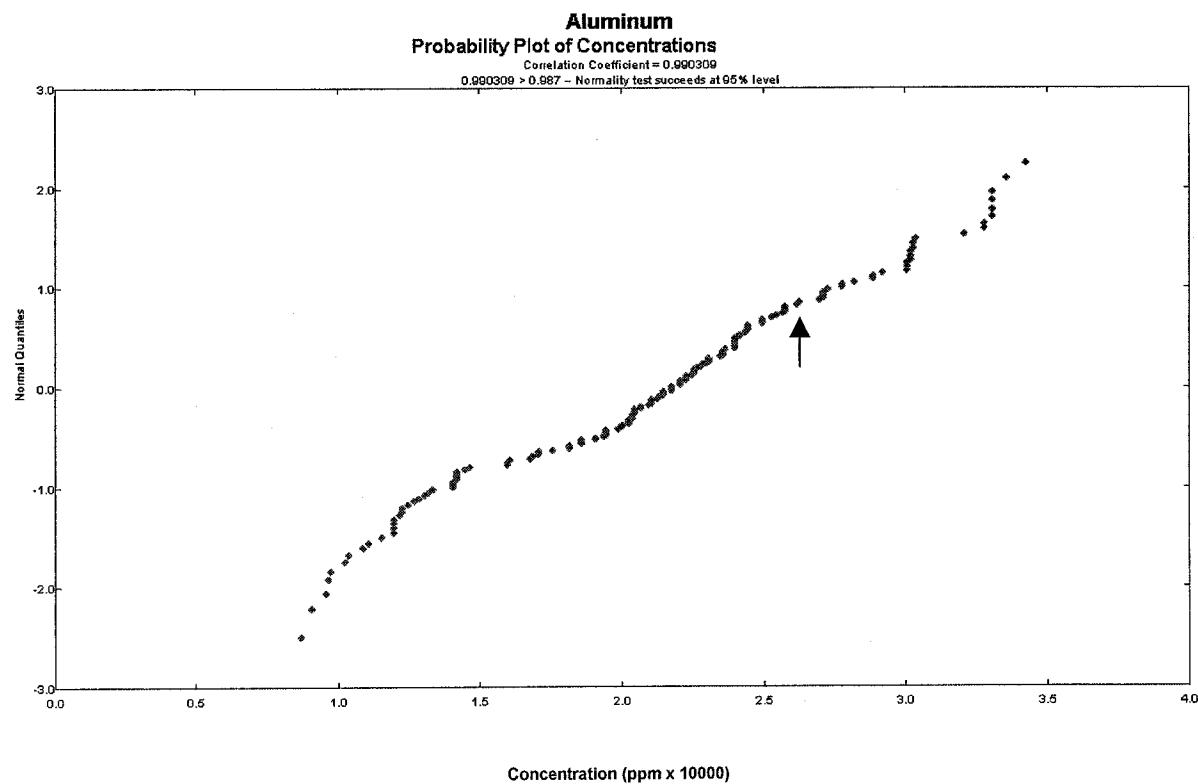
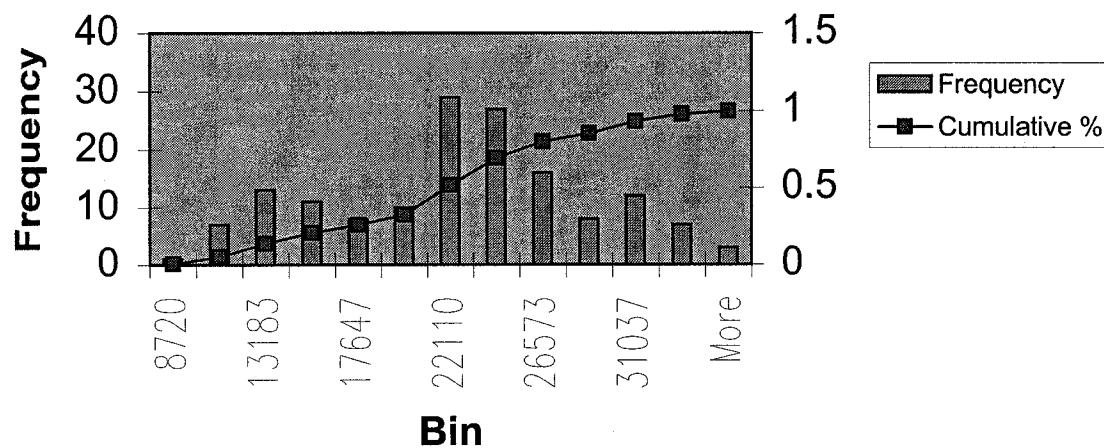
**Aluminum - Preliminary Facility-
Specific Metals Data Set**

Mean	21493.02632
Standard Error	510.2997195
Median	21950
Mode	24000
Standard Deviation	6291.397474
Sample Variance	39581682.17
Kurtosis	-0.554947391
Skewness	-0.053707488
Range	26780
Minimum	8720
Maximum	35500
Sum	3266940
Count	152
Largest(1)	35500
Smallest(1)	8720
Confidence Level(95.0%)	1008.250151

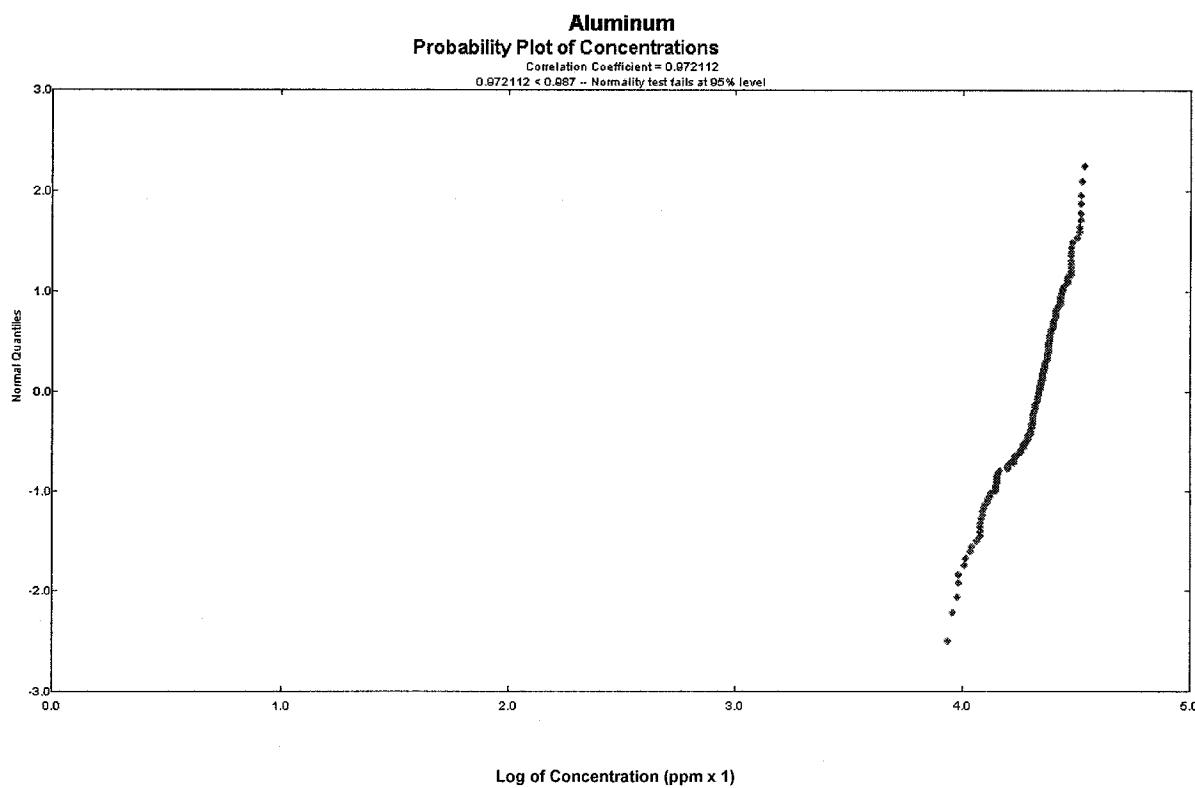
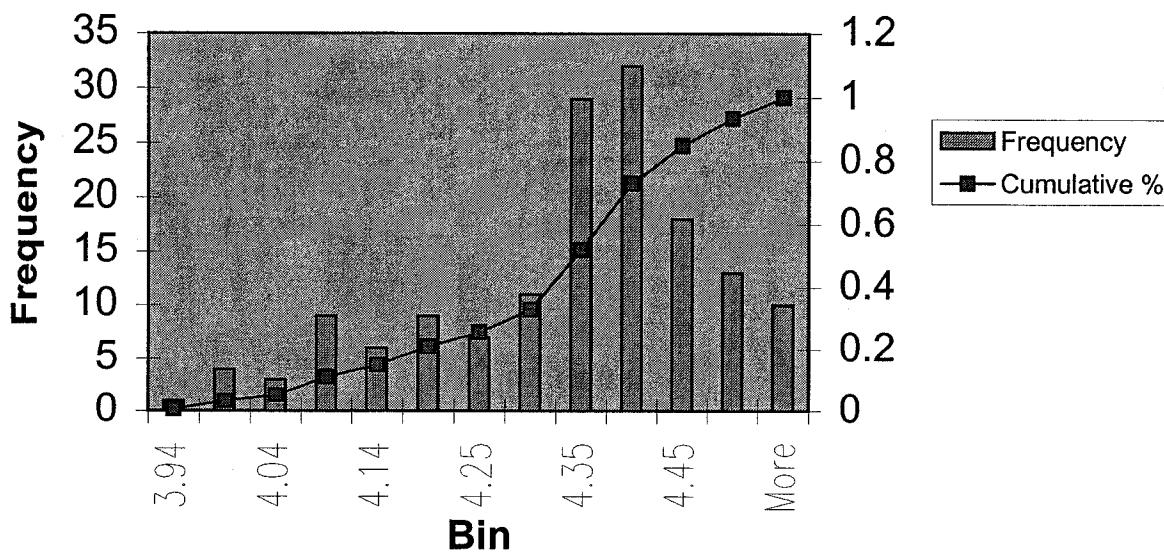
**Aluminum - Preliminary Facility-
Specific Metals Data Set
Log Transformed**

Mean	4.3113304
Standard Error	0.011420027
Median	4.341424384
Mode	4.380211242
Standard Deviation	0.14079555
Sample Variance	0.019823387
Kurtosis	-0.171312608
Skewness	-0.70281567
Range	0.609711868
Minimum	3.940516485
Maximum	4.550228353
Sum	655.3222208
Count	152
Largest(1)	4.550228353
Smallest(1)	3.940516485
Confidence Level(95.0%)	0.022563689

Aluminum - Preliminary Facility-Specific Metals Data Set



Aluminum - Preliminary Facility-Specific Metals Data Set - Log Transformed



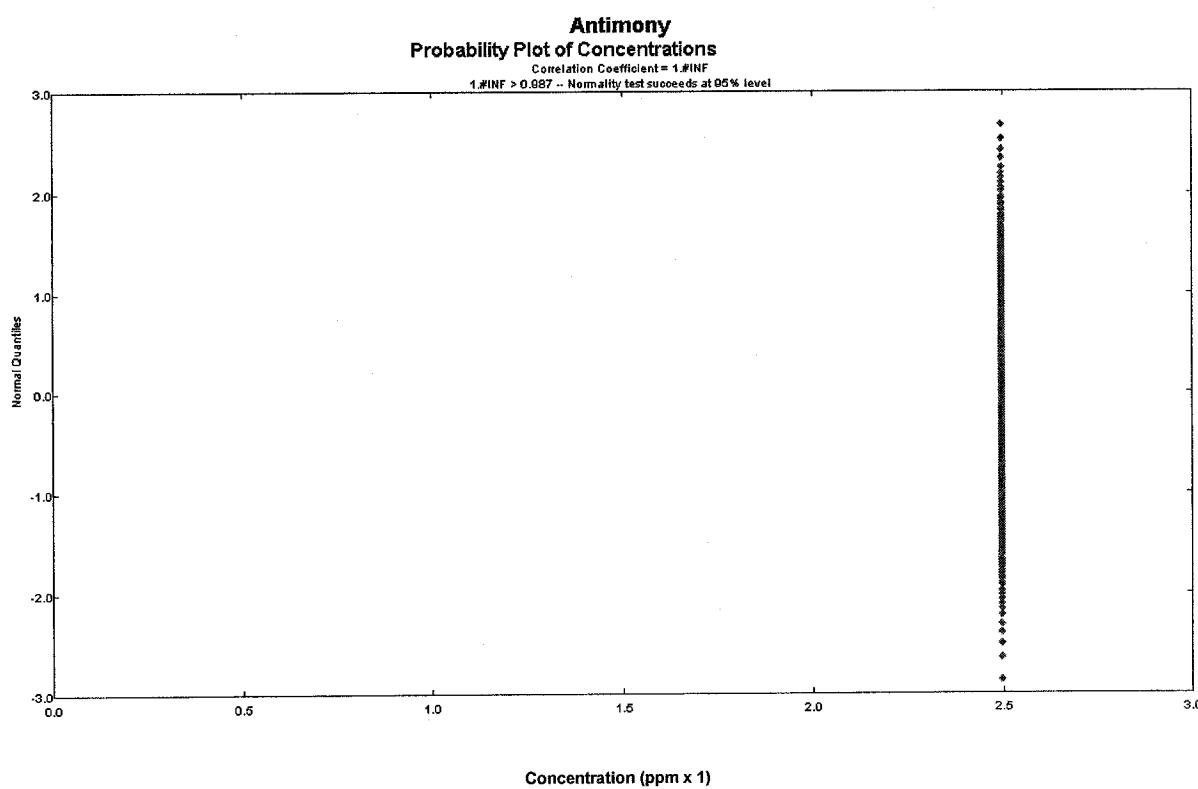
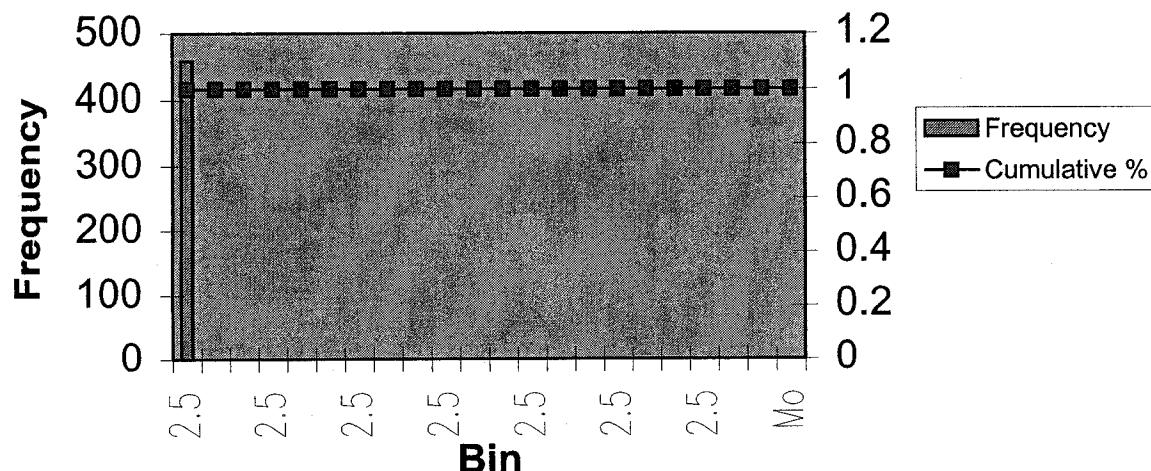
**Antimony - Preliminary Facility-Specific
Metals Data Set**

Mean	2.5
Standard Error	0
Median	2.5
Mode	2.5
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	2.5
Maximum	2.5
Sum	1147.5
Count	459
Largest(1)	2.5
Smallest(1)	2.5
Confidence Level(95.0%)	0

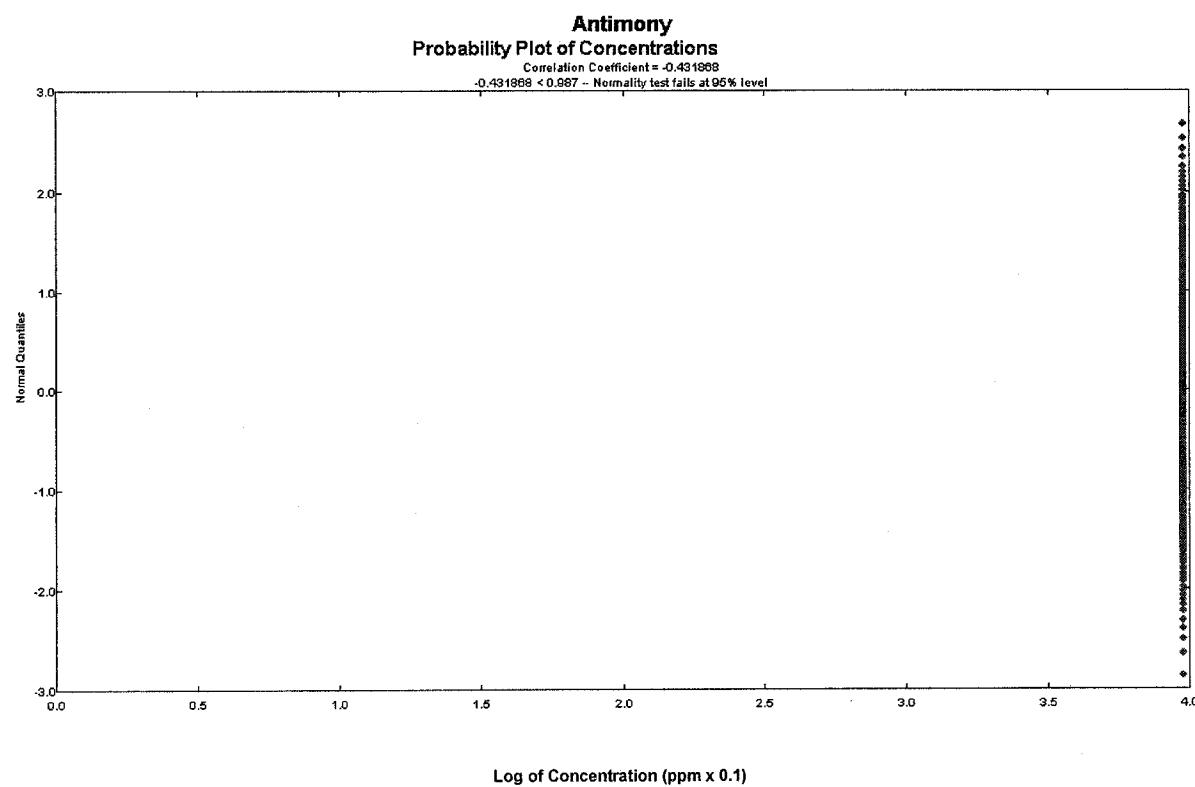
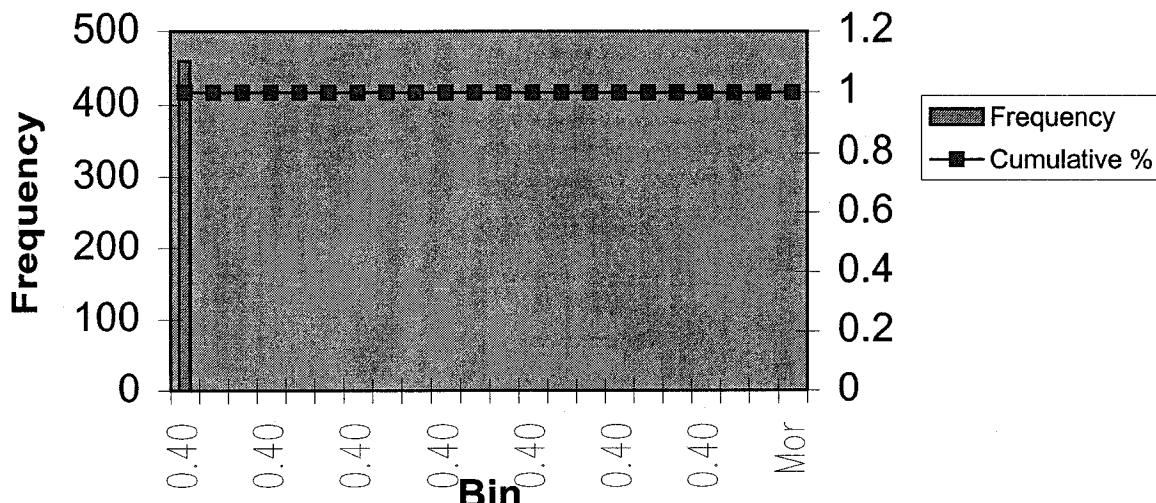
**Antimony - Preliminary Facility-Specific
Metals Data Set
Log Transformed**

Mean	0.397940009
Standard Error	0
Median	0.397940009
Mode	0.397940009
Standard Deviation	0
Sample Variance	0
Kurtosis	-2.00877193
Skewness	1.003281679
Range	0
Minimum	0.397940009
Maximum	0.397940009
Sum	182.654464
Count	459
Largest(1)	0.397940009
Smallest(1)	0.397940009
Confidence Level(95.0%)	0

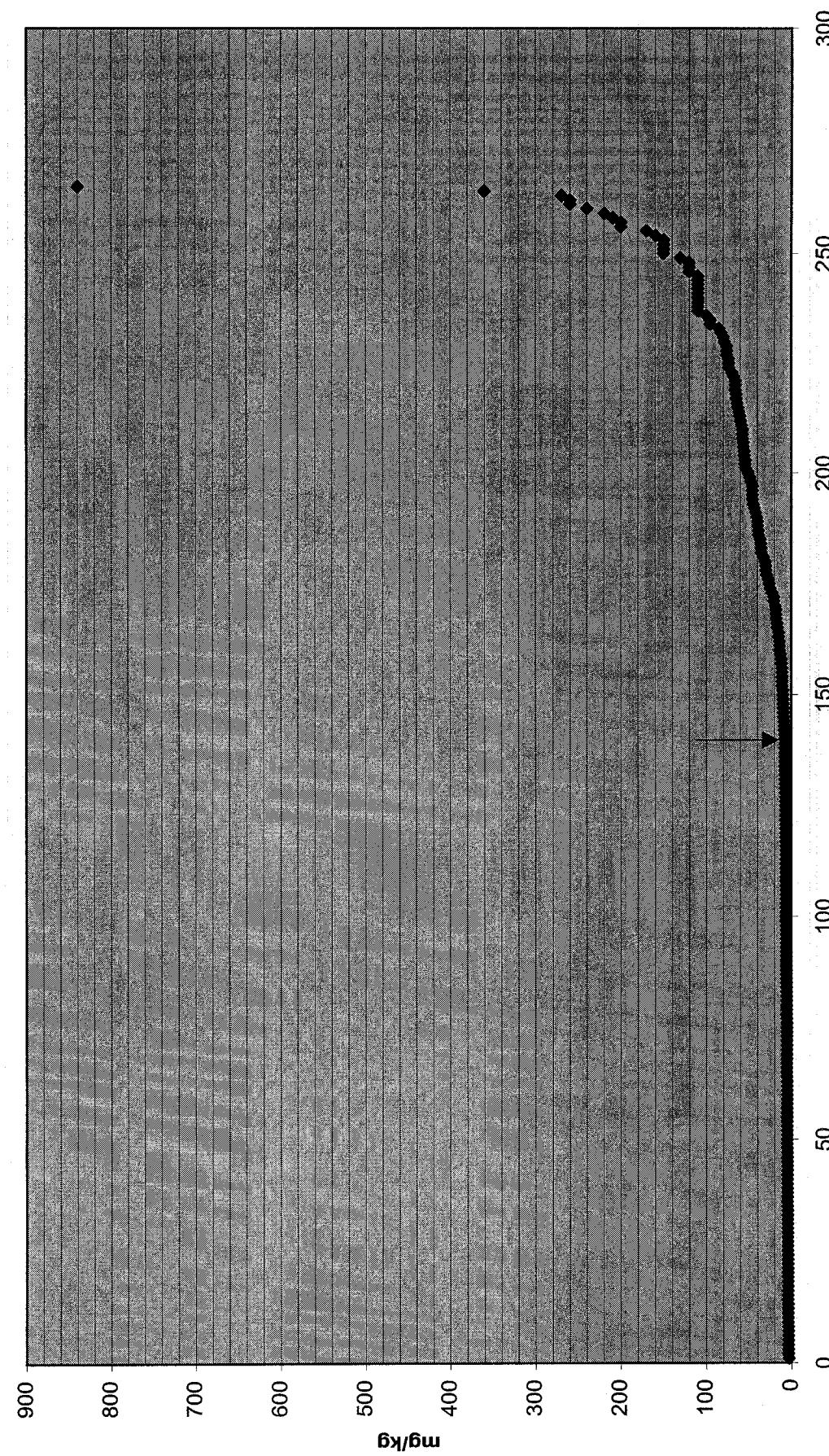
Antimony - Preliminary Facility-Specific Metals Data Set



Antimony - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Arsenic - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



Arsenic - Preliminary Facility-Specific Metals Data Set

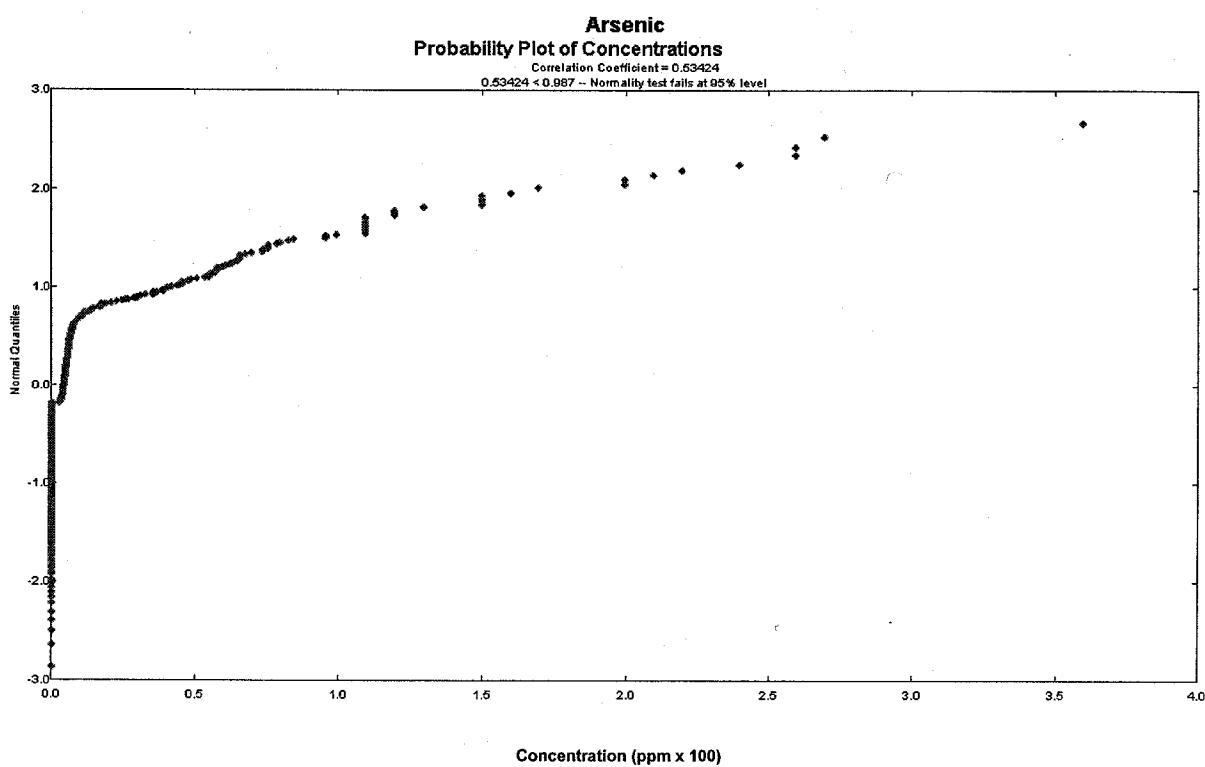
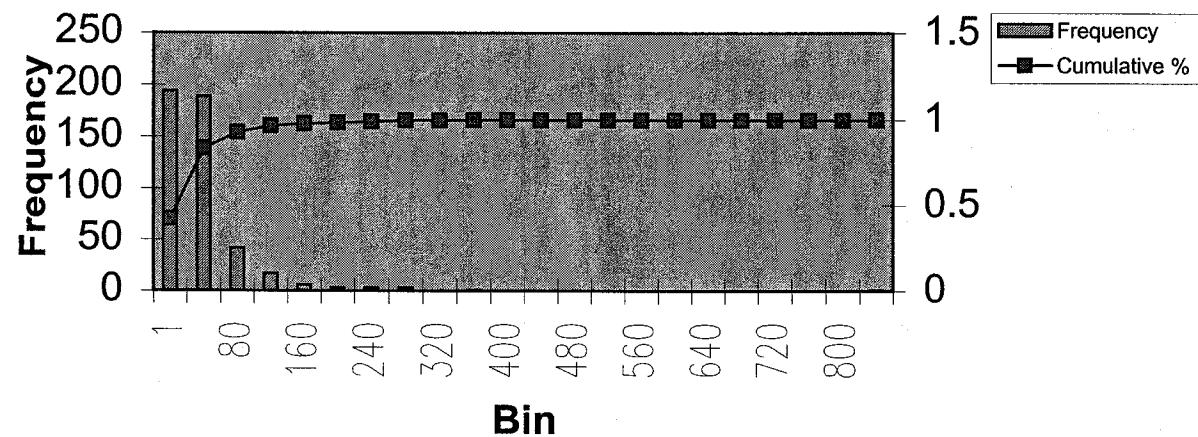
Mean	22.42962963
Standard Error	2.744012516
Median	4.8
Mode	0.5
Standard Deviation	58.78850698
Sample Variance	3456.088552
Kurtosis	85.88334385
Skewness	7.433308898
Range	839.5
Minimum	0.5
Maximum	840
Sum	10295.2
Count	459
Largest(1)	840
Smallest(1)	0.5
Confidence Level(95.0%)	5.392420466

Arsenic - Preliminary Facility-Specific Metals Data Set

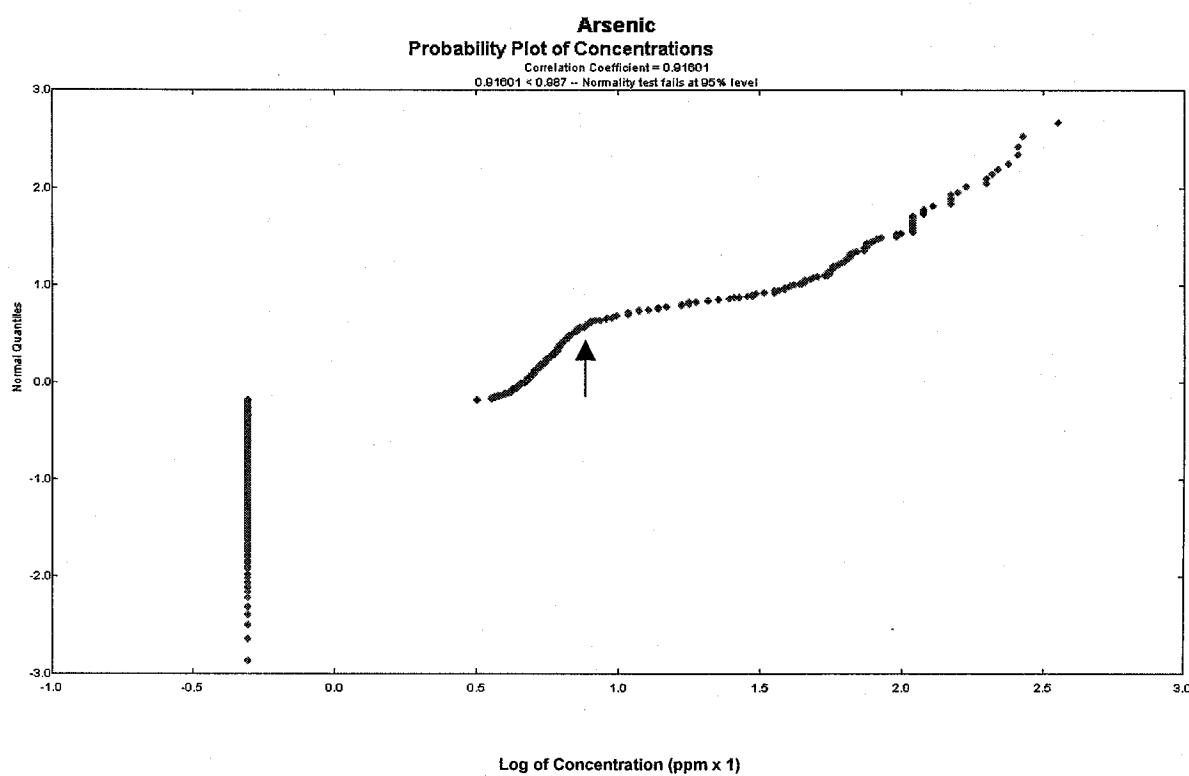
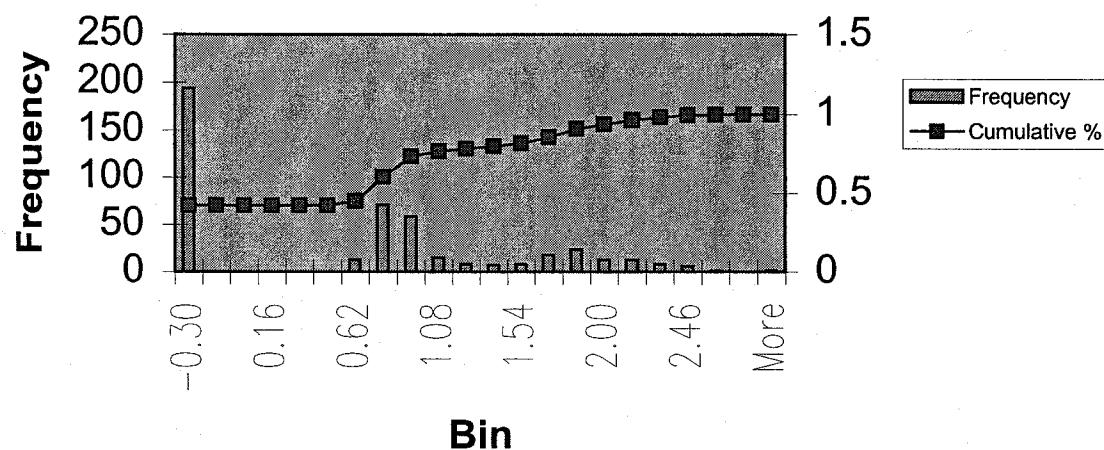
Log Transformed

Mean	0.553835899
Standard Error	0.039420125
Median	0.681241237
Mode	-0.301029996
Standard Deviation	0.844547999
Sample Variance	0.713261323
Kurtosis	-0.93566831
Skewness	0.476575337
Range	3.225309282
Minimum	-0.301029996
Maximum	2.924279286
Sum	254.2106778
Count	459
Largest(1)	2.924279286
Smallest(1)	-0.301029996
Confidence Level(95.0%)	0.077466807

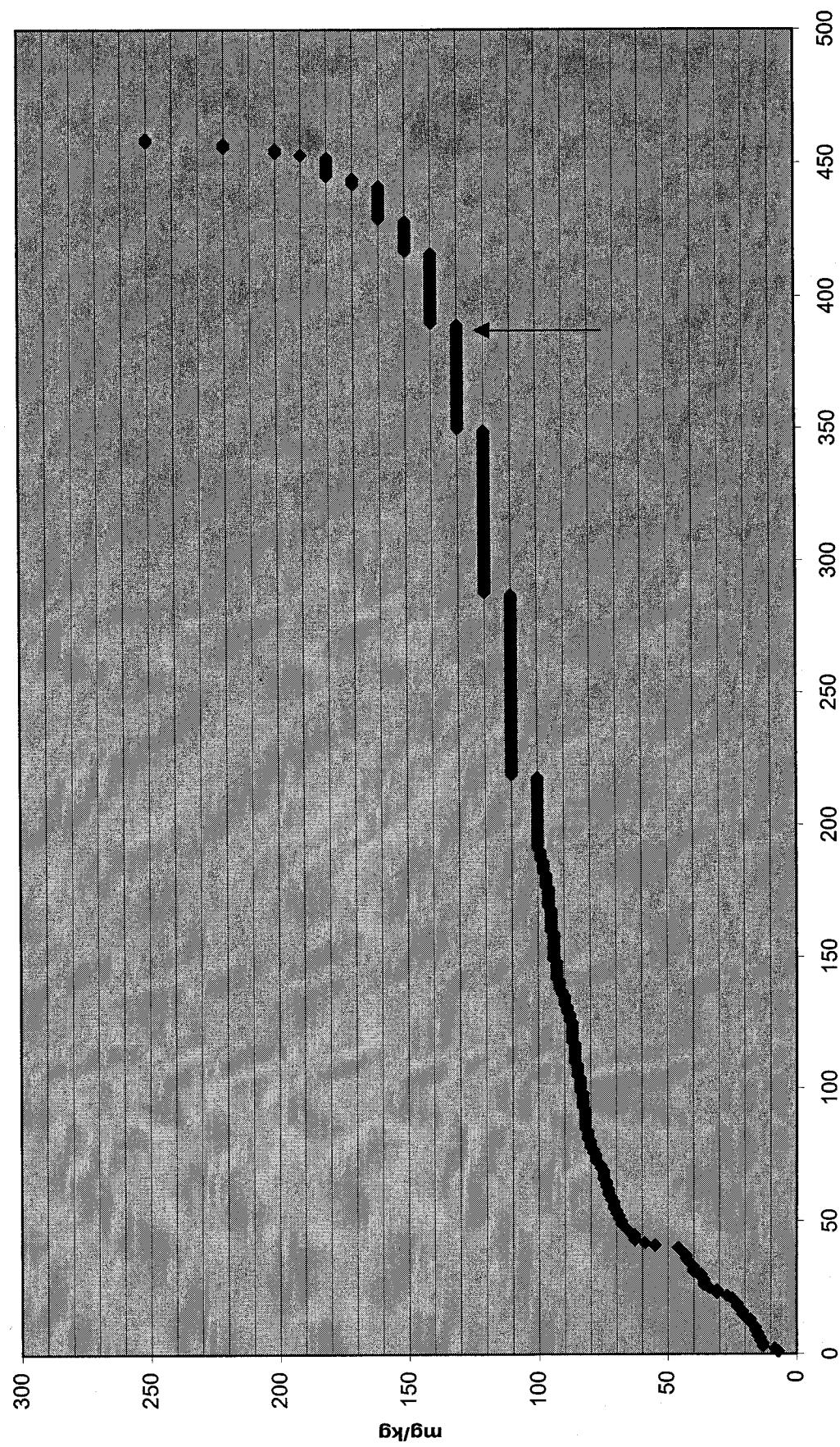
Arsenic - Preliminary Facility-Specific Metals Data Set



Arsenic - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Barium - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



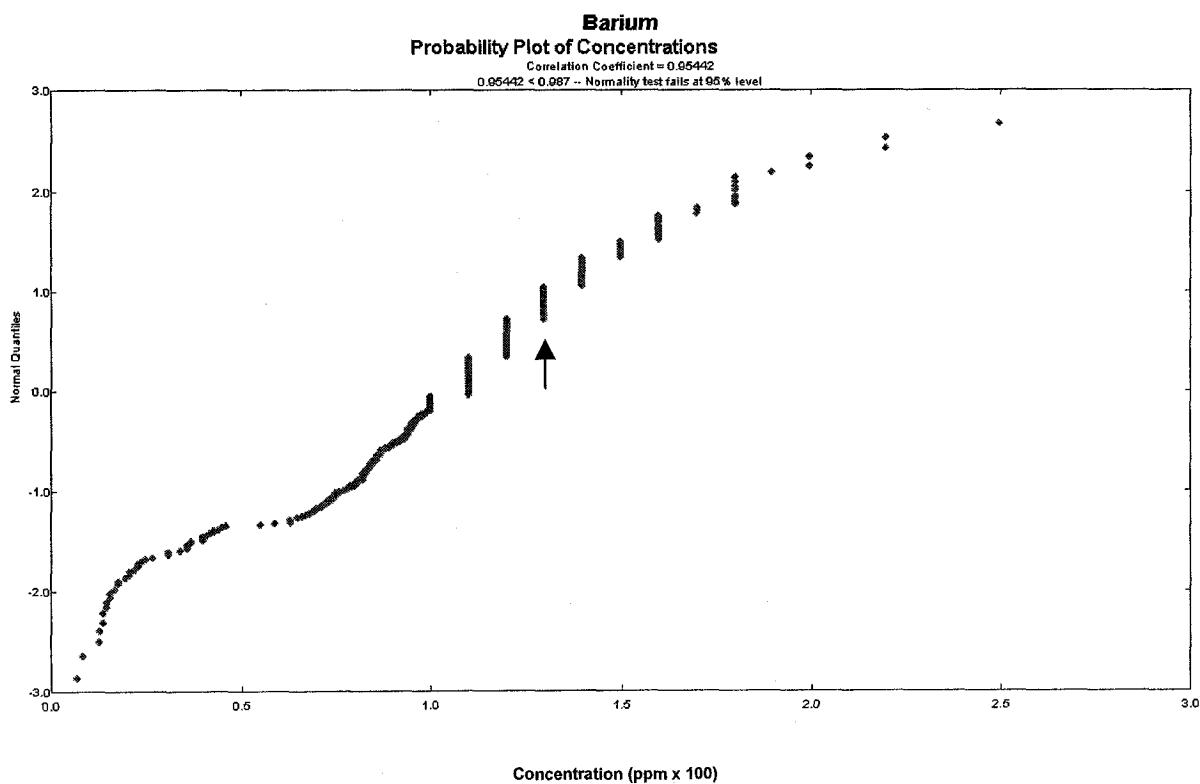
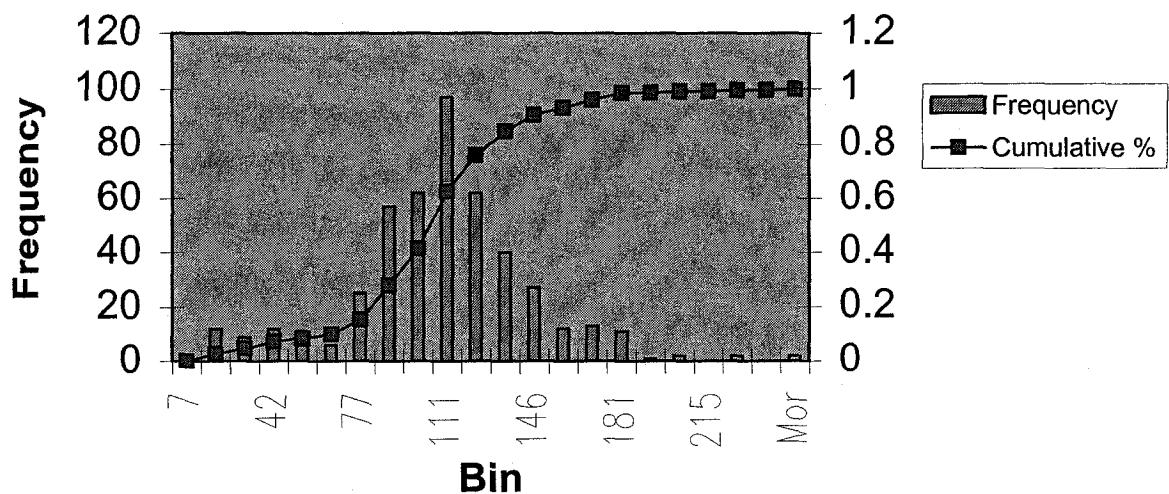
**Barium - Preliminary Facility-
Specific Metals Data Set**

Mean	104.679085
Standard Error	1.702515421
Median	110
Mode	110
Standard Deviation	36.47517608
Sample Variance	1330.43847
Kurtosis	1.606725297
Skewness	-0.027550376
Range	242.8
Minimum	7.2
Maximum	250
Sum	48047.7
Count	459
Largest(1)	250
Smallest(1)	7.2
Confidence Level(95.0%)	3.345713237

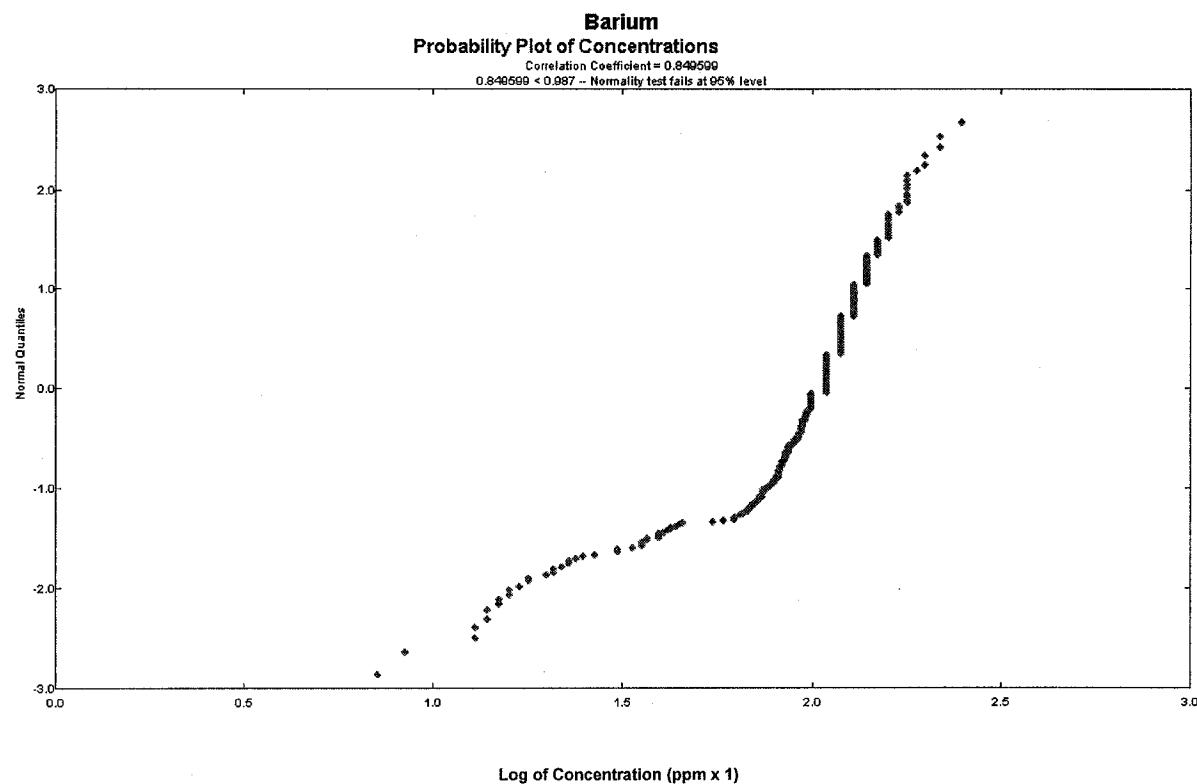
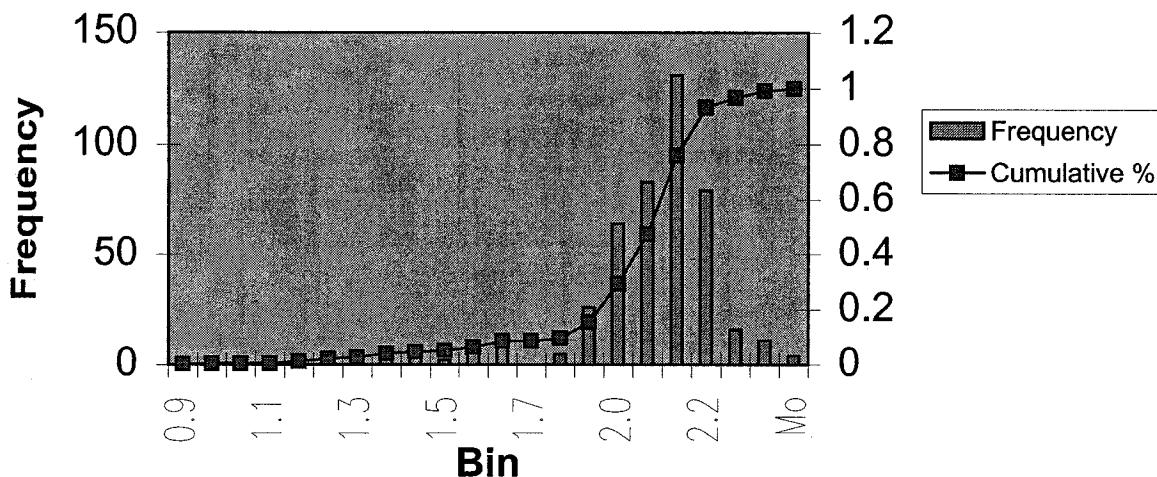
**Barium - Preliminary Facility-
Specific Metals Data Set
Log Transformed**

Mean	1.98011571
Standard Error	0.010151202
Median	2.041392685
Mode	2.041392685
Standard Deviation	0.217482255
Sample Variance	0.047298531
Kurtosis	6.342820132
Skewness	-2.249751874
Range	1.540607512
Minimum	0.857332496
Maximum	2.397940009
Sum	908.8731111
Count	459
Largest(1)	2.397940009
Smallest(1)	0.857332496
Confidence Level(95.0%)	0.019948725

Barium - Preliminary Facility-Specific Metals Data Set



Barium - Preliminary Facility-Specific Metals Data Set - Log Transformed



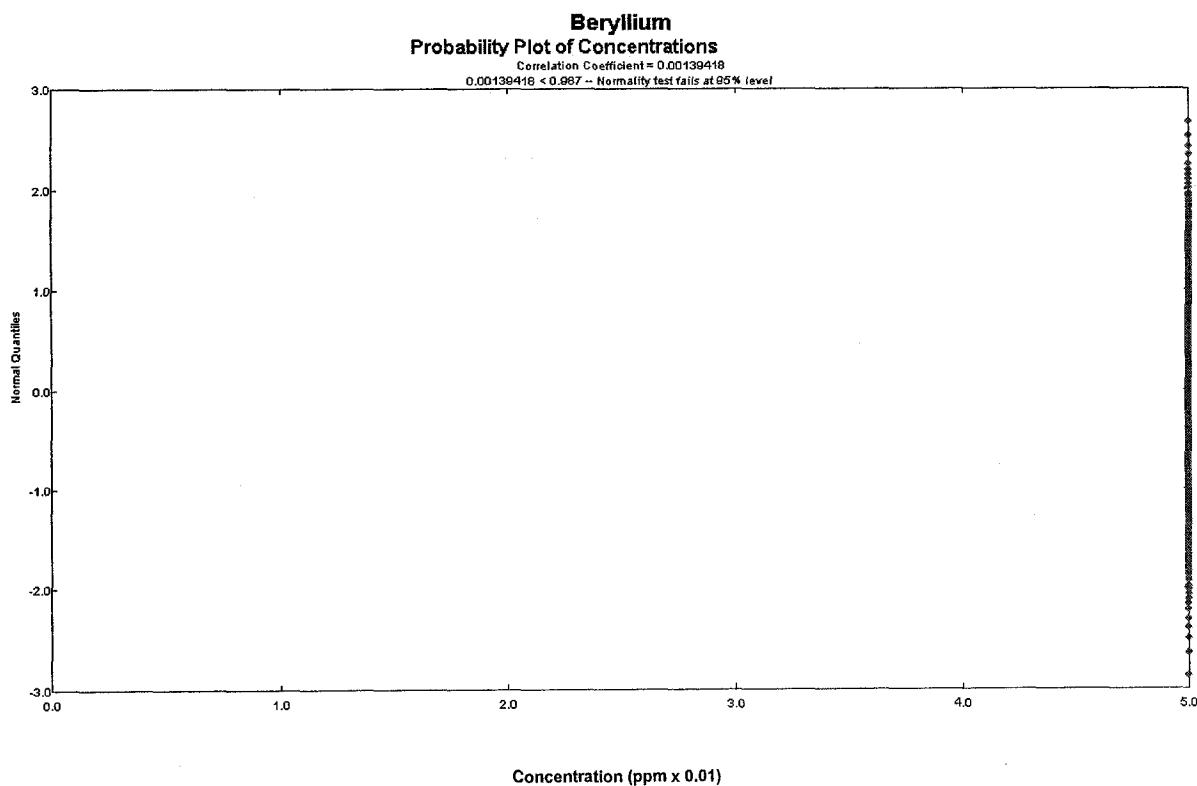
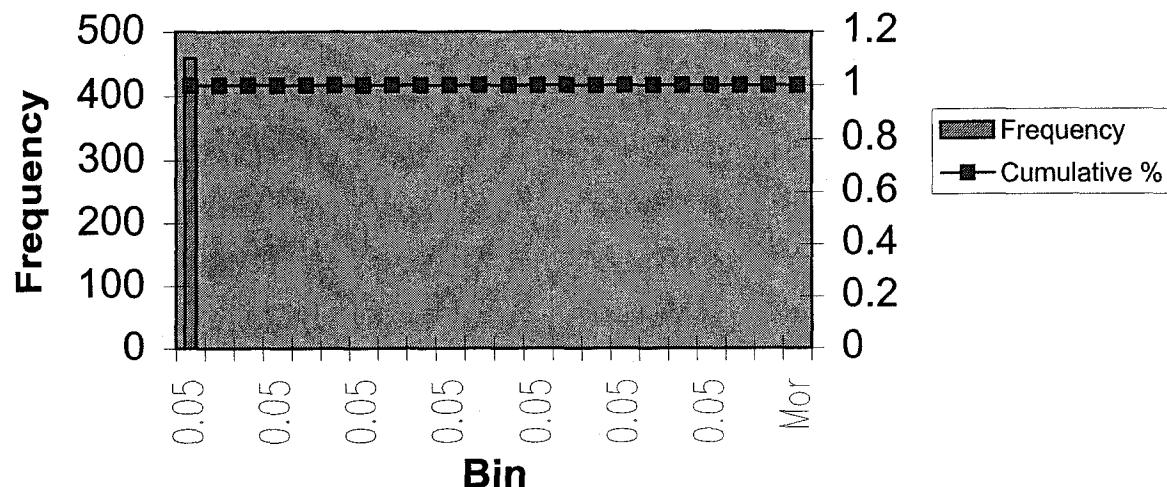
Beryllium - Preliminary Facility-Specific Metals Data Set

Mean	0.05
Standard Error	0
Median	0.05
Mode	0.05
Standard Deviation	0
Sample Variance	0
Kurtosis	-2.00877193
Skewness	-1.003281679
Range	0
Minimum	0.05
Maximum	0.05
Sum	22.95
Count	459
Largest(1)	0.05
Smallest(1)	0.05
Confidence Level(95.0%)	0

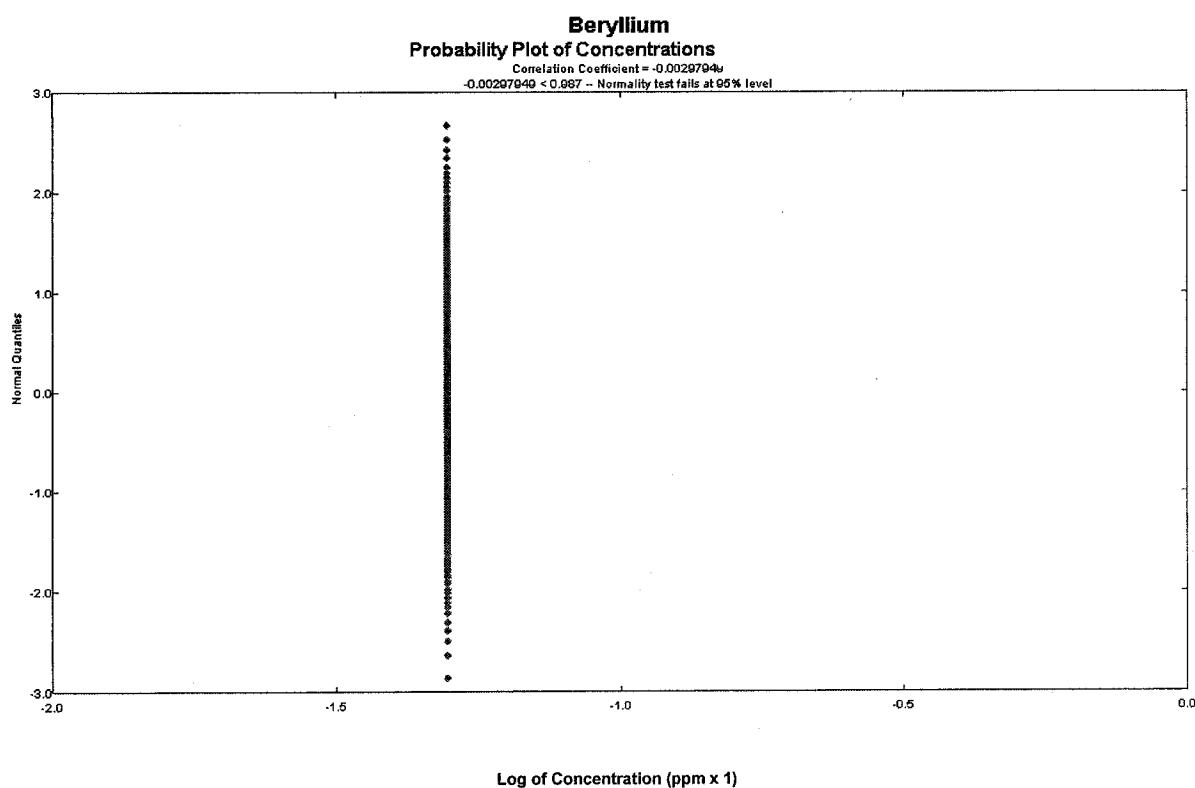
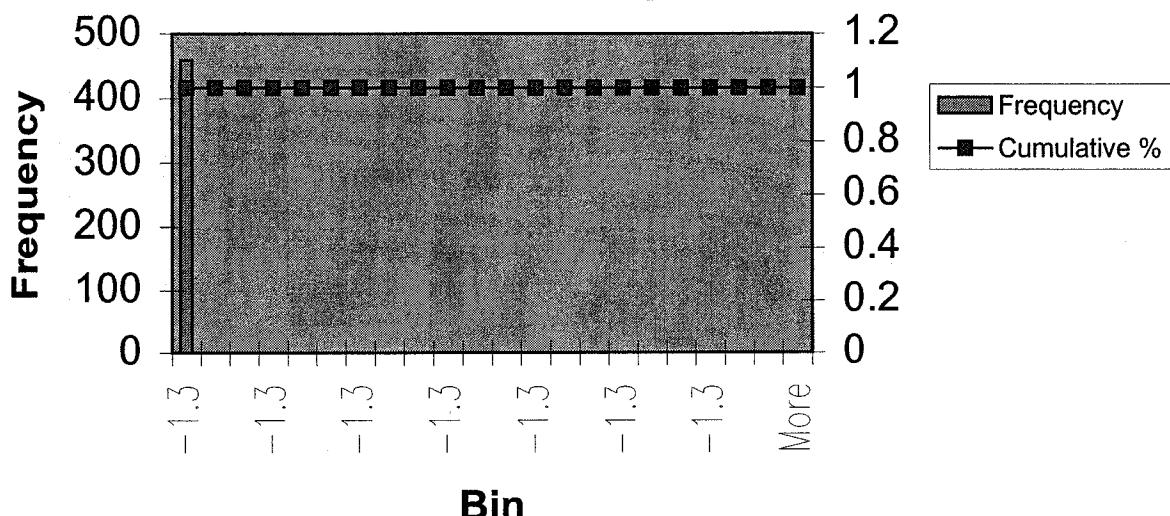
**Beryllium - Preliminary Facility-Specific Metals Data Set
Log Transformed**

Mean	-1.301029996
Standard Error	7.85179E-09
Median	-1.301029996
Mode	-1.301029996
Standard Deviation	1.68219E-07
Sample Variance	2.82976E-14
Kurtosis	-2.00877193
Skewness	-1.003281679
Range	0
Minimum	-1.301029996
Maximum	-1.301029996
Sum	-597.172768
Count	459
Largest(1)	-1.301029996
Smallest(1)	-1.301029996
Confidence Level(95.0%)	1.543E-08

Beryllium - Preliminary Facility-Specific Metals Data Set



Beryllium - Preliminary Facility-Specific Metals Data Set - Log Transformed



Cadmium - Preliminary Facility-Specific Metals Data Set

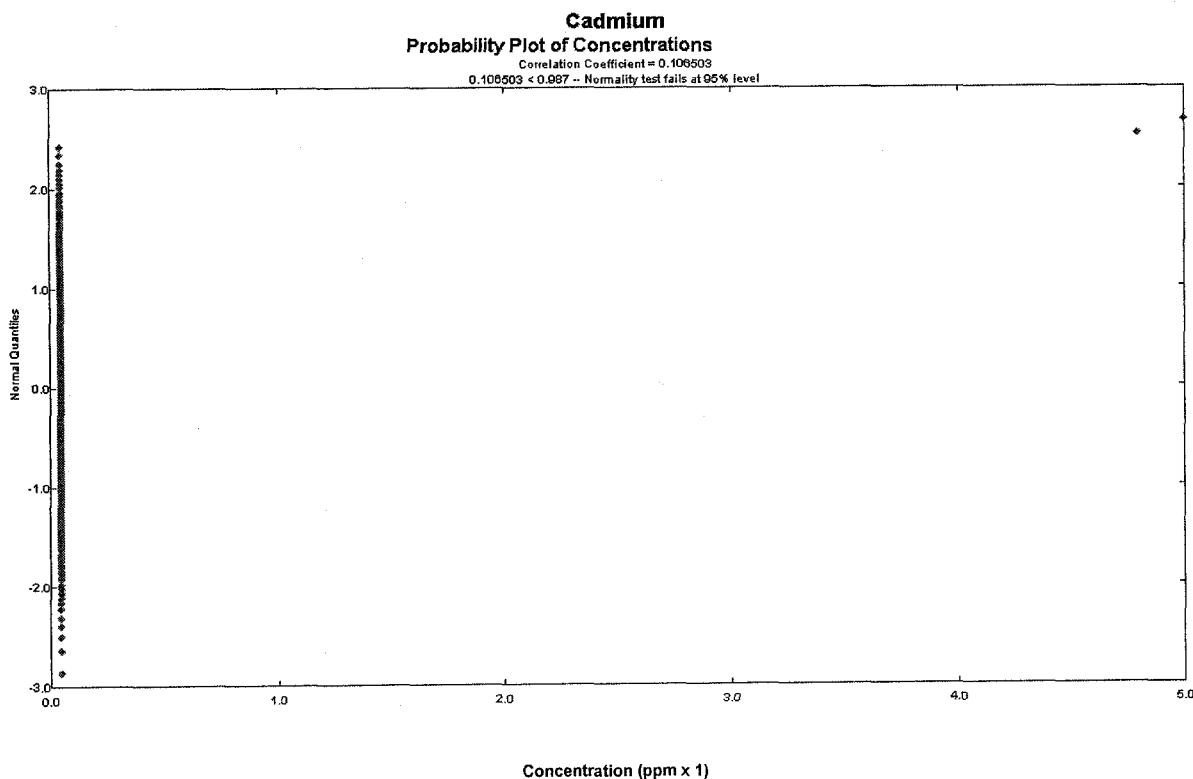
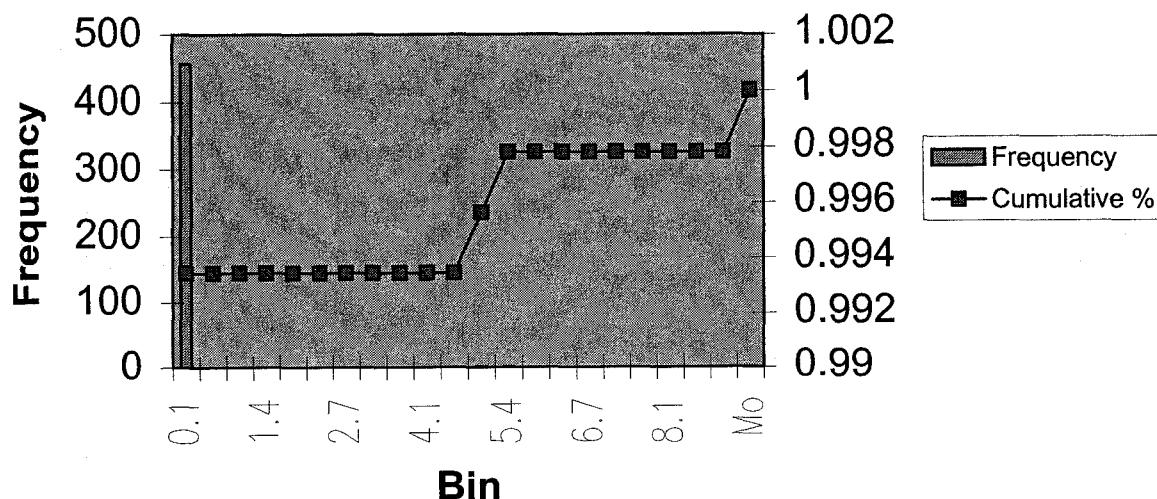
Mean	0.091503268
Standard Error	0.025218632
Median	0.05
Mode	0.05
Standard Deviation	0.540291169
Sample Variance	0.291914547
Kurtosis	219.7182592
Skewness	14.30997383
Range	9.35
Minimum	0.05
Maximum	9.4
Sum	42
Count	459
Largest(1)	9.4
Smallest(1)	0.05
Confidence Level(95.0%)	0.049558618

Cadmium - Preliminary Facility-Specific Metals Data Set

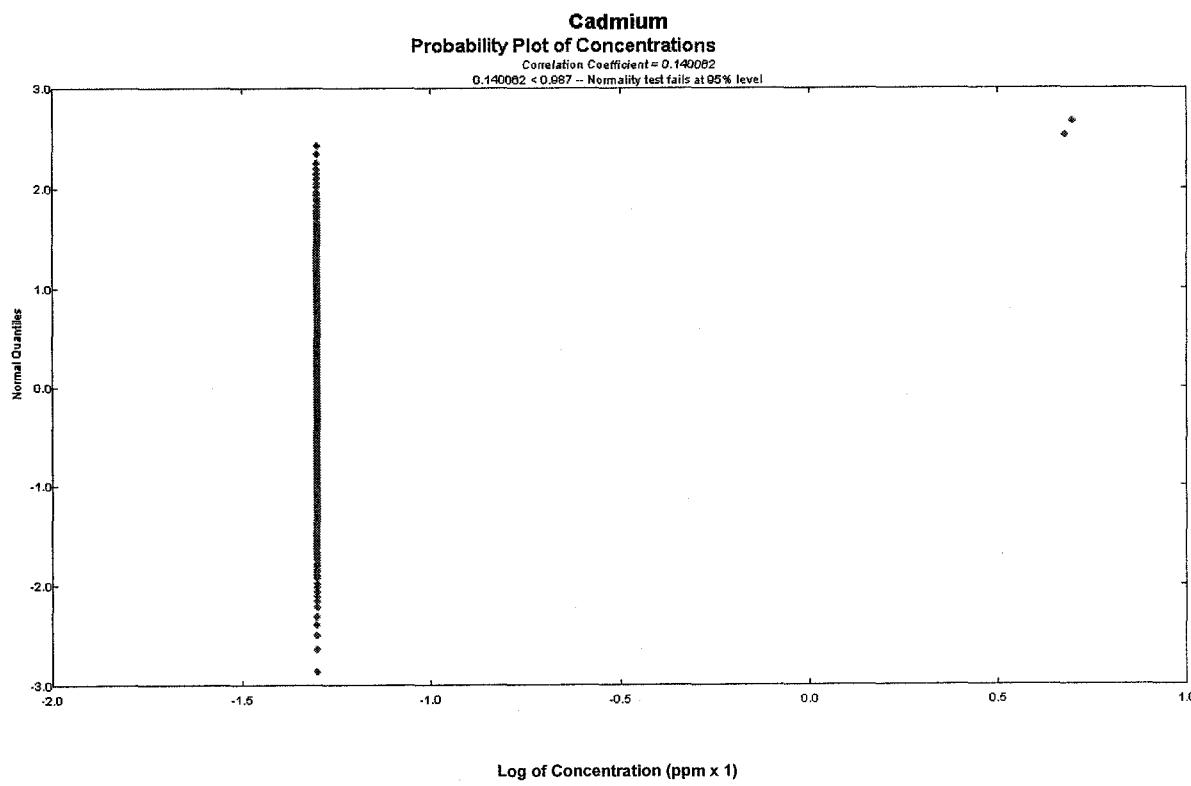
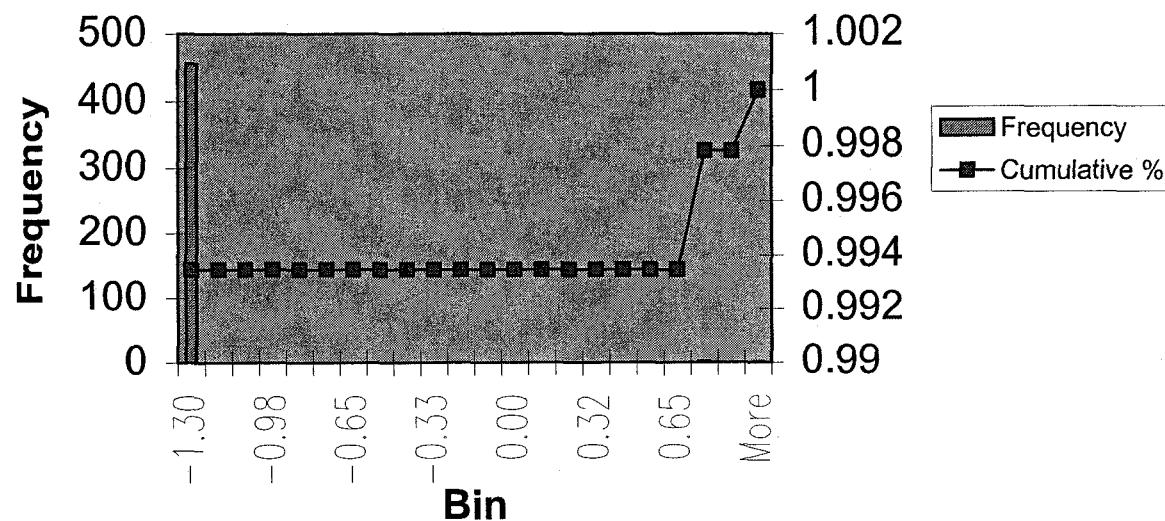
Log Transformed

Mean	-1.287399431
Standard Error	0.007868614
Median	-1.301029996
Mode	-1.301029996
Standard Deviation	0.168579439
Sample Variance	0.028419027
Kurtosis	152.2865744
Skewness	12.36680811
Range	2.274157849
Minimum	-1.301029996
Maximum	0.973127854
Sum	-590.9163389
Count	459
Largest(1)	0.973127854
Smallest(1)	-1.301029996
Confidence Level(95.0%)	0.015463077

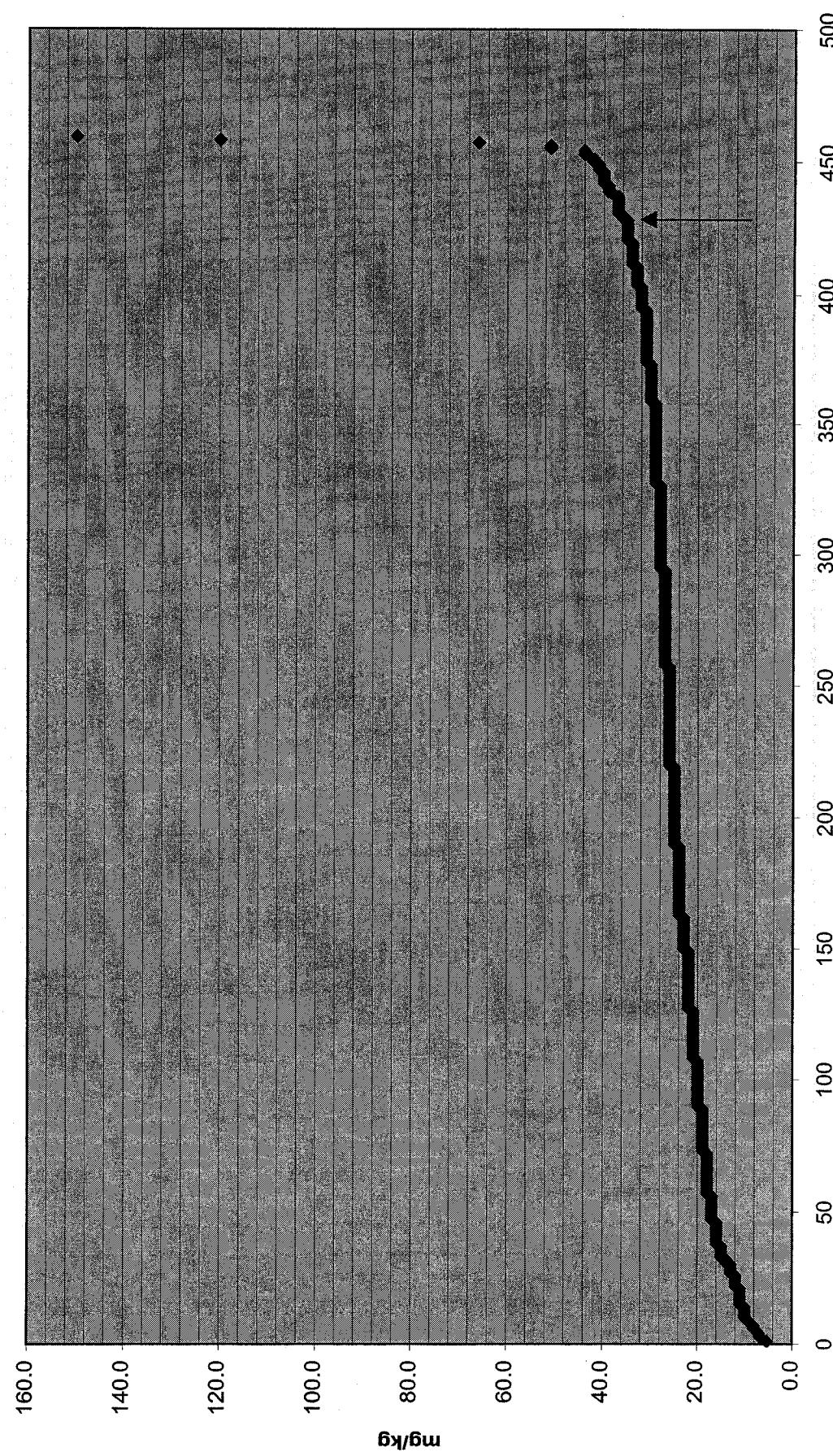
Cadmium - Preliminary Facility-Specific Metals Data Set



Cadmium - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Chromium - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



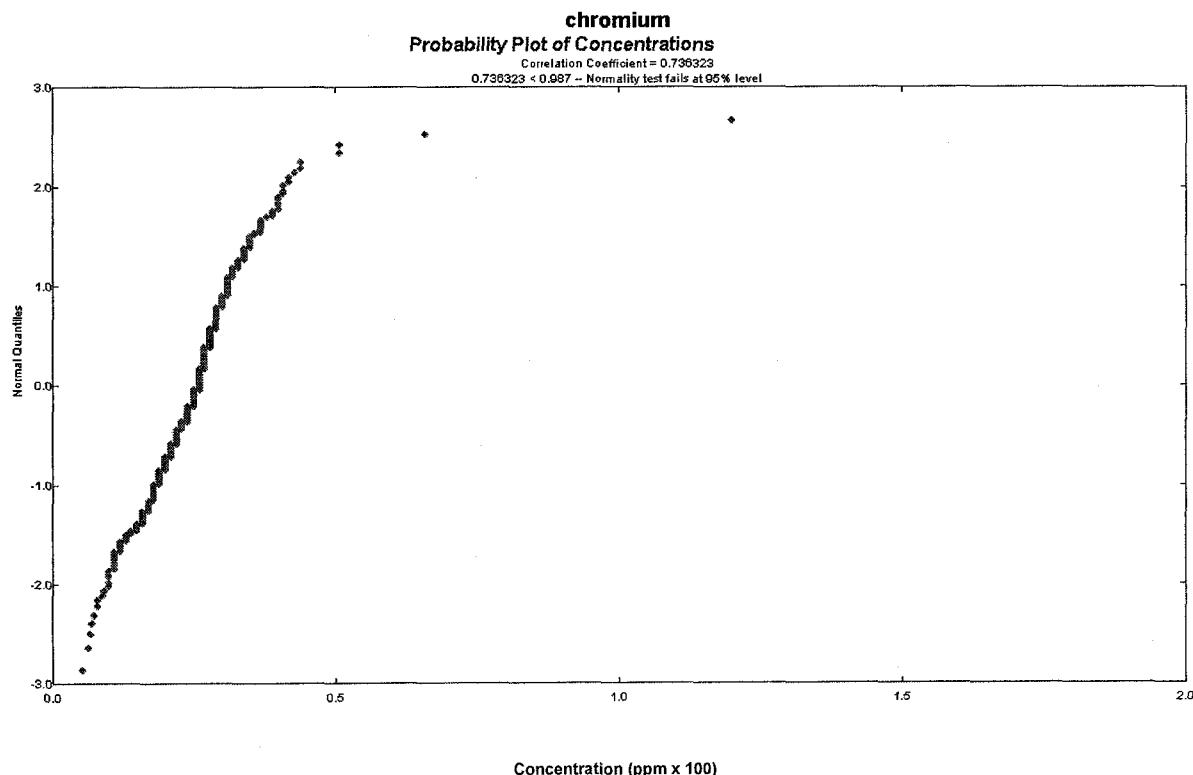
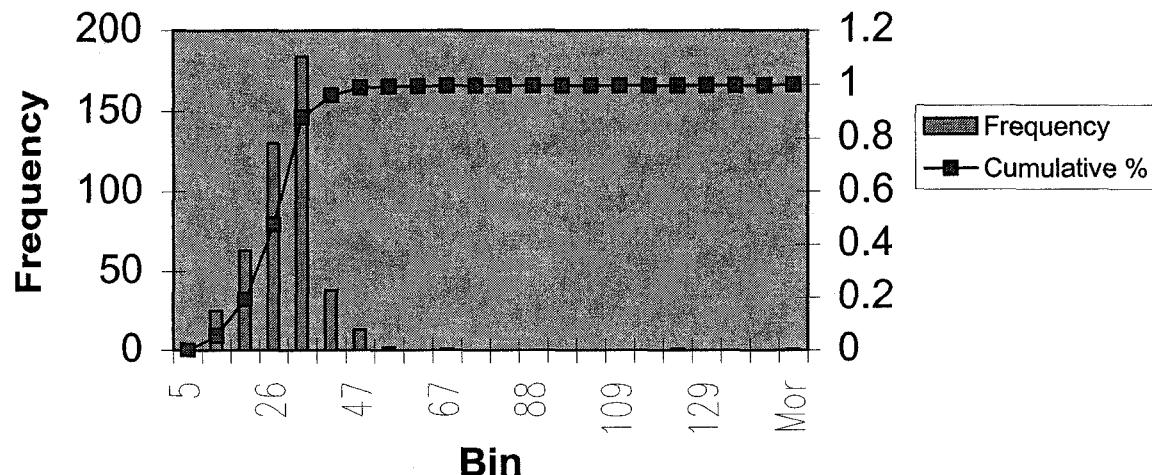
Chromium - Preliminary Facility-Specific Metals Data Set

Mean	25.7254902
Standard Error	0.481881734
Median	26
Mode	26
Standard Deviation	10.32397174
Sample Variance	106.5843925
Kurtosis	60.17346973
Skewness	5.55472283
Range	144.7
Minimum	5.3
Maximum	150
Sum	11808
Count	459
Largest(1)	150
Smallest(1)	5.3
Confidence Level(95.0%)	0.946974151

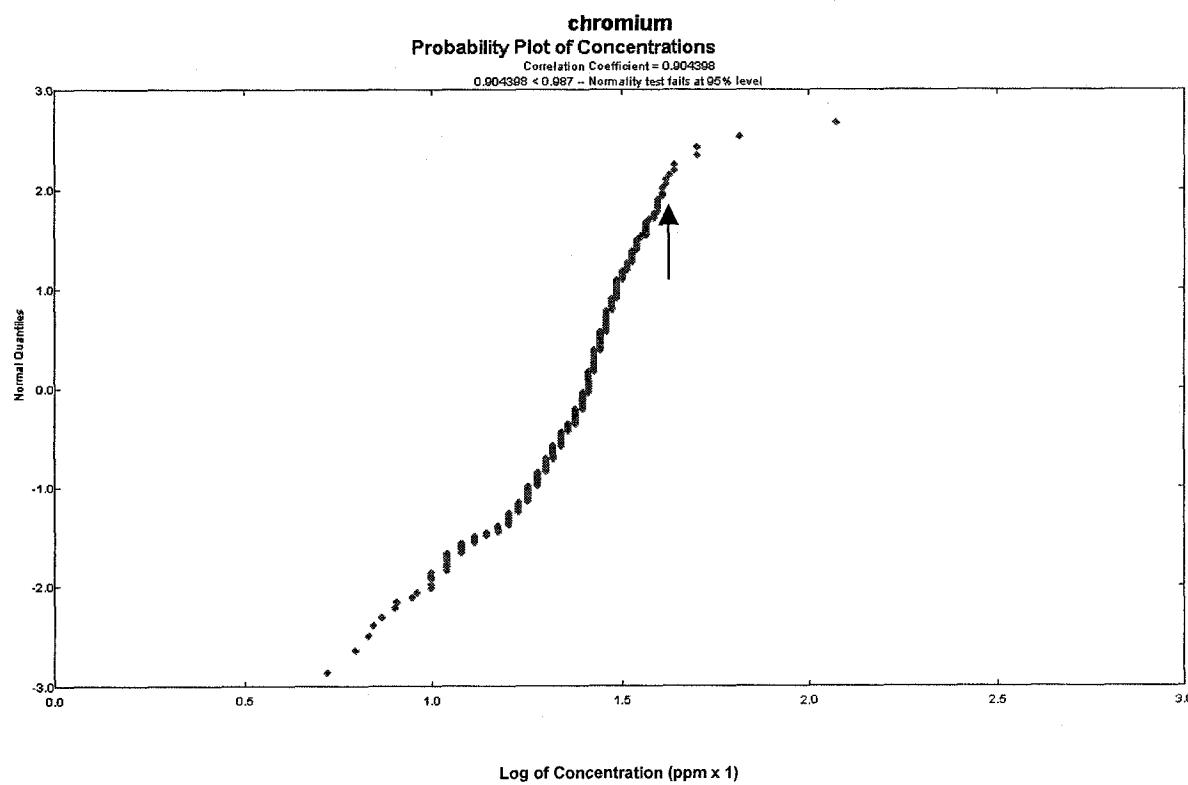
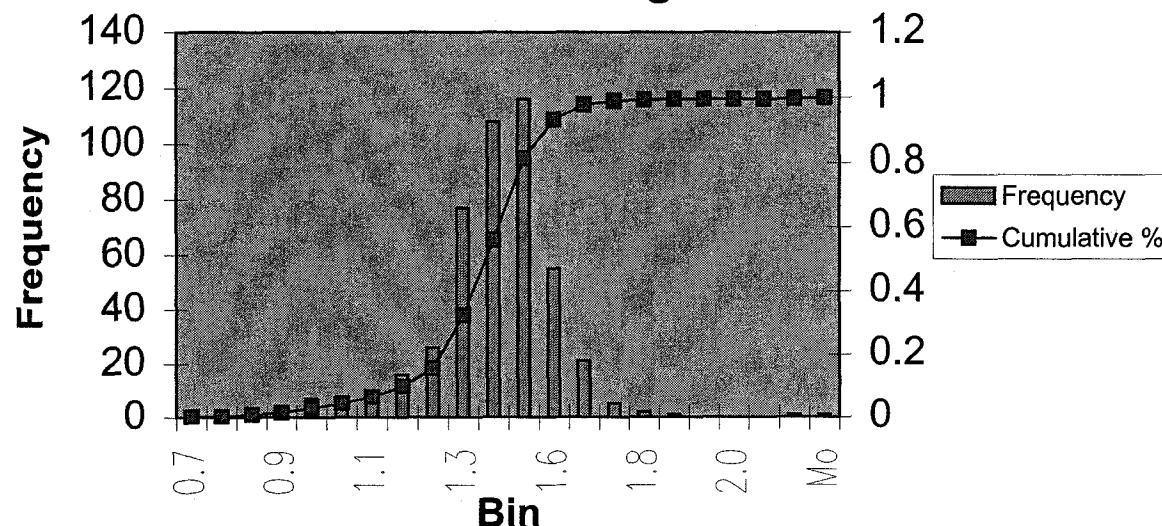
Chromium - Preliminary Facility-Specific Metals Data Set Log Transformed

Mean	1.384501804
Standard Error	0.007069486
Median	1.414973348
Mode	1.414973348
Standard Deviation	0.151458679
Sample Variance	0.022939732
Kurtosis	4.528566833
Skewness	-0.601842373
Range	1.451815389
Minimum	0.72427587
Maximum	2.176091259
Sum	635.4863279
Count	459
Largest(1)	2.176091259
Smallest(1)	0.72427587
Confidence Level(95.0%)	0.013892662

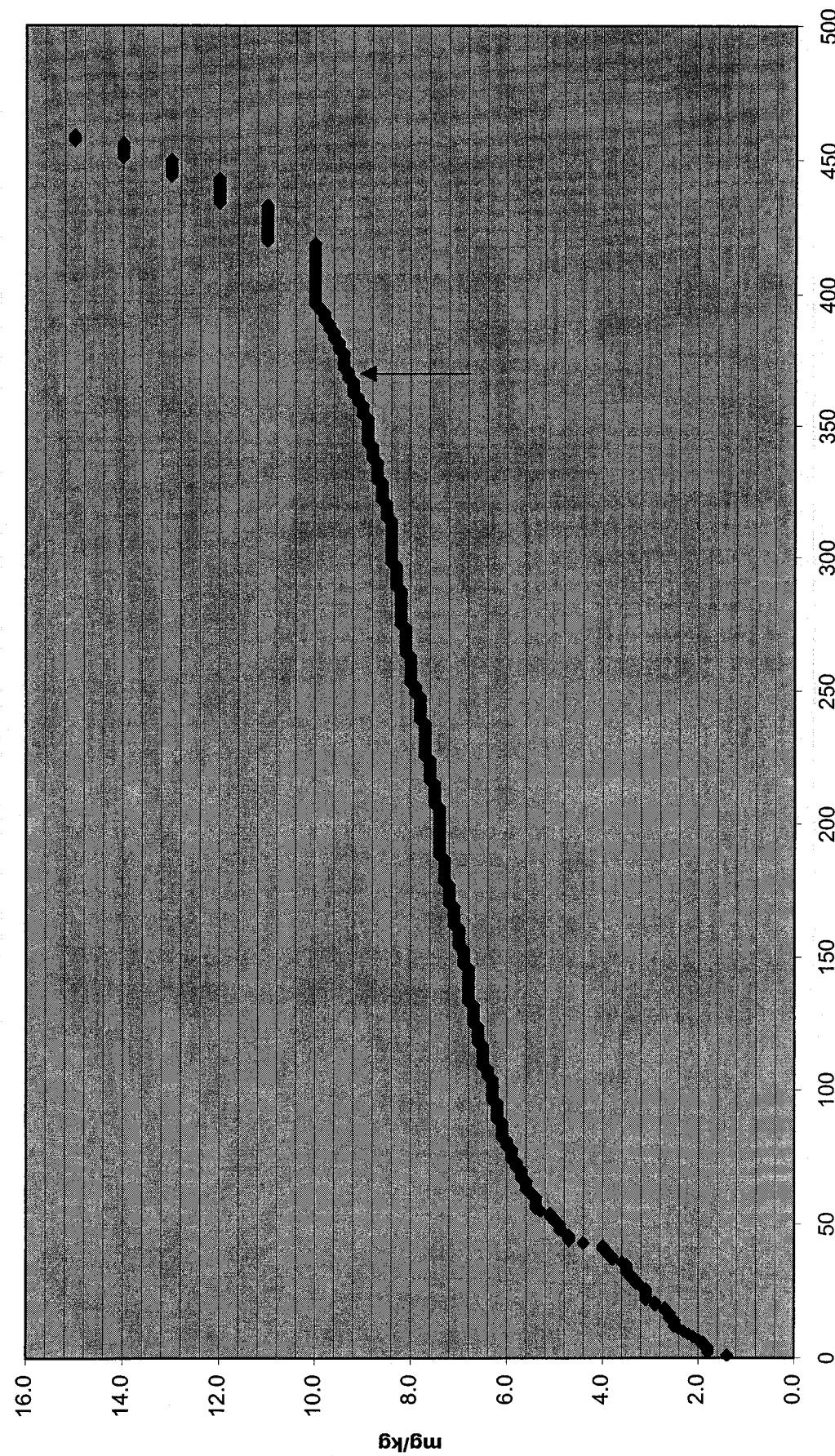
Chromium - Preliminary Facility-Specific Metals Data Set



Chromium - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Cobalt - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



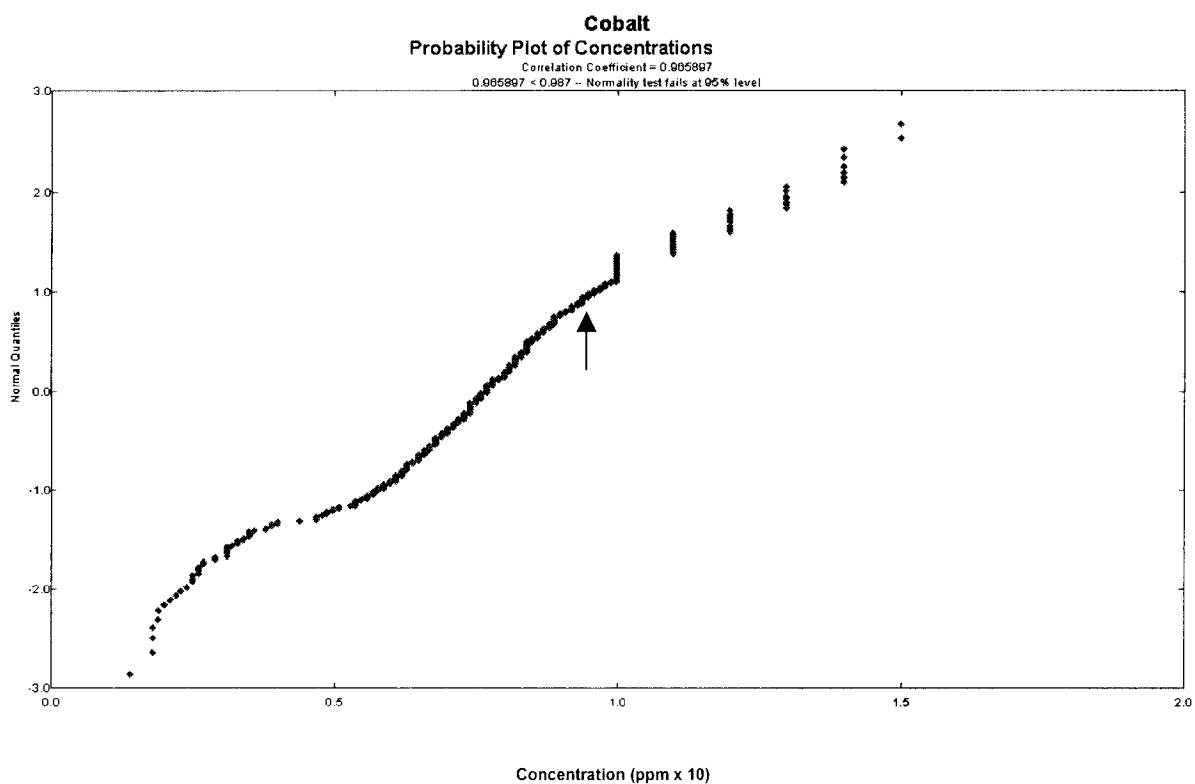
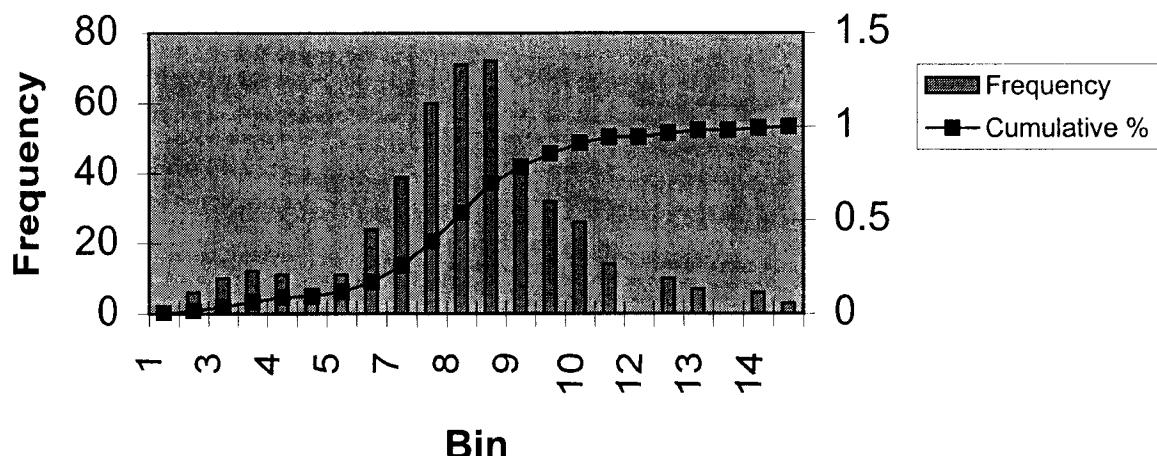
**Cobalt - Preliminary Facility-
Specific Metals Data Set**

Mean	7.666230937
Standard Error	0.110390245
Median	7.7
Mode	10
Standard Deviation	2.365032095
Sample Variance	5.593376811
Kurtosis	0.986320838
Skewness	0.033761811
Range	13.6
Minimum	1.4
Maximum	15
Sum	3518.8
Count	459
Largest(1)	15
Smallest(1)	1.4
Confidence Level(95.0%)	0.216934366

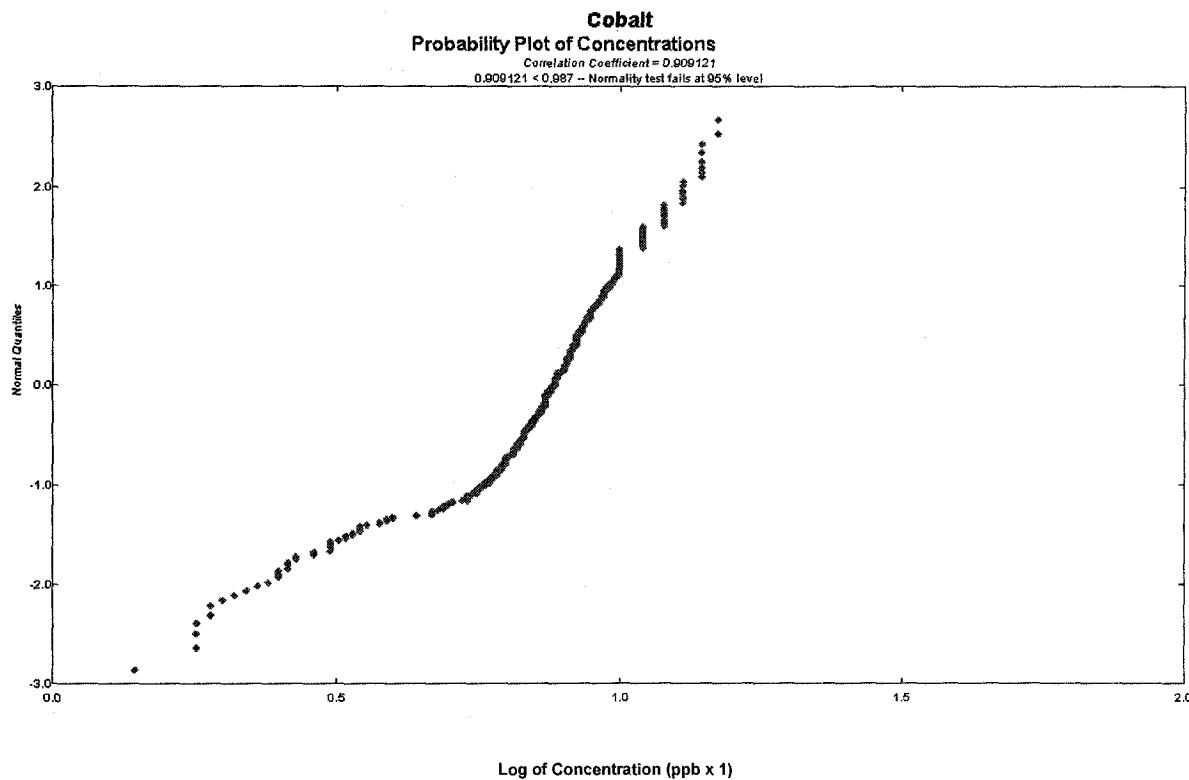
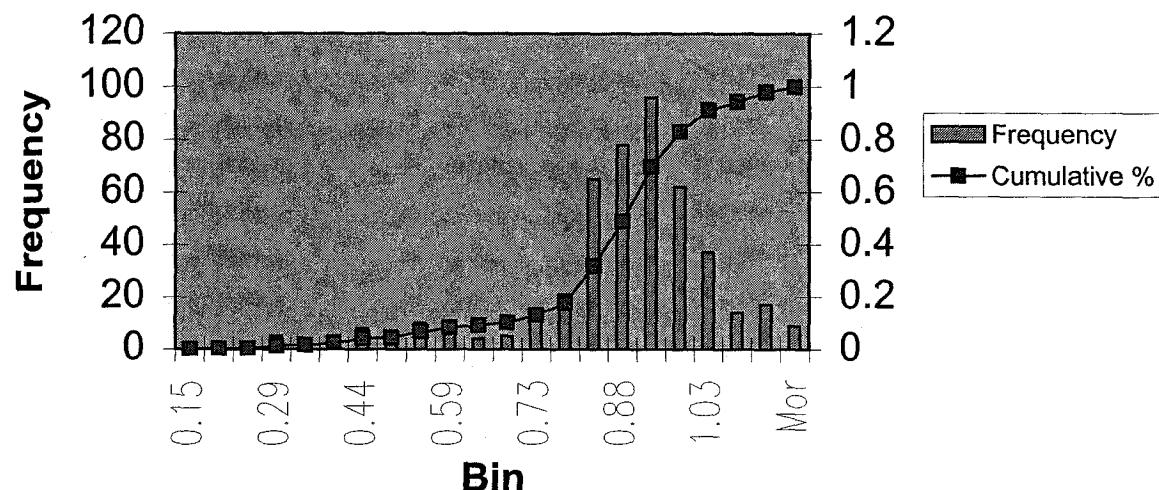
**Cobalt - Preliminary Facility-
Specific Metals Data Set
Log Transformed**

Mean	0.858642124
Standard Error	0.00763513
Median	0.886490725
Mode	1
Standard Deviation	0.163577203
Sample Variance	0.026757501
Kurtosis	3.23283074
Skewness	-1.524949606
Range	1.029963223
Minimum	0.146128036
Maximum	1.176091259
Sum	394.116735
Count	459
Largest(1)	1.176091259
Smallest(1)	0.146128036
Confidence Level(95.0%)	0.015004243

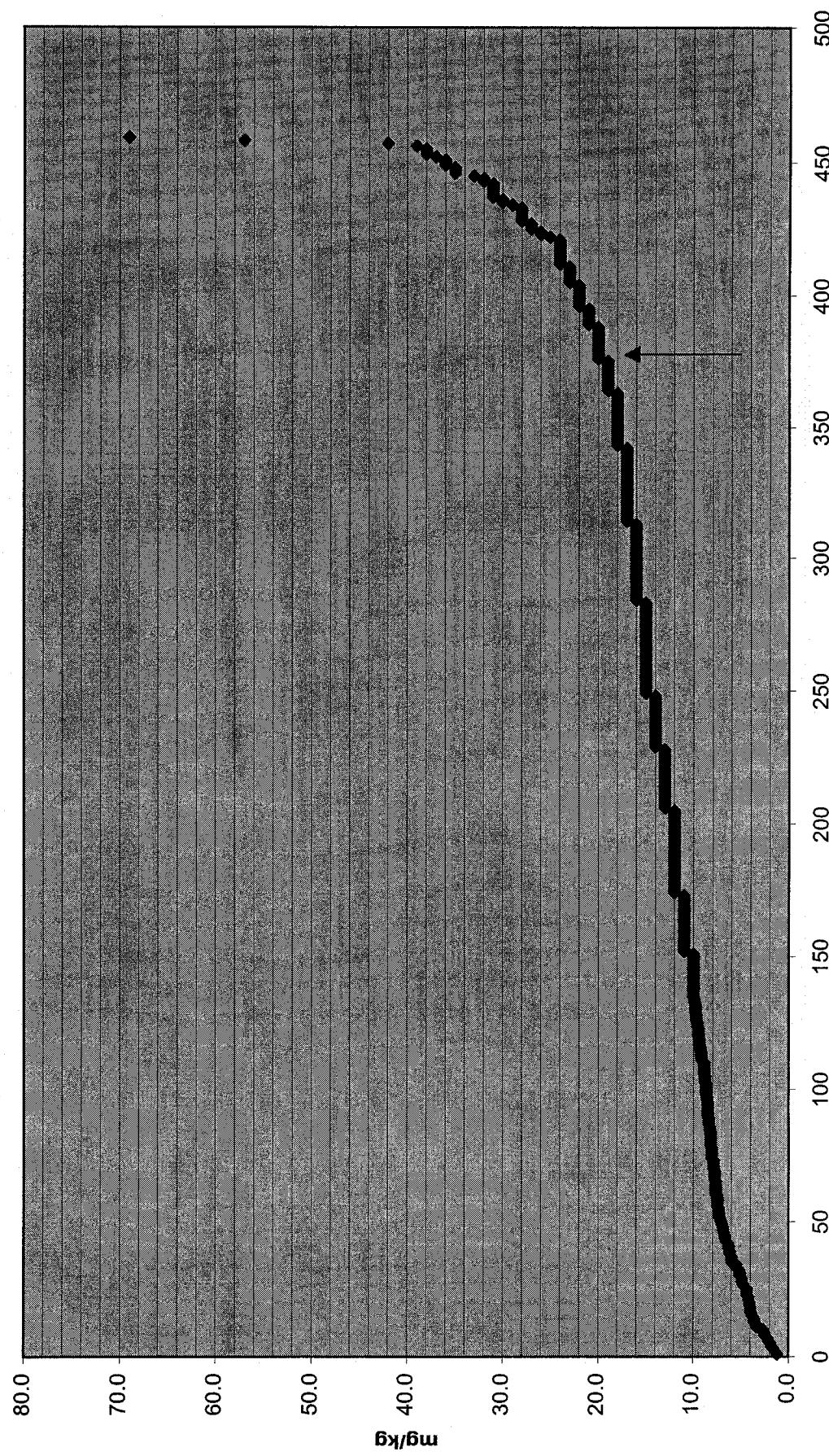
Cobalt - Preliminary Facility-Specific Metals Data Set



Cobalt - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Copper - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



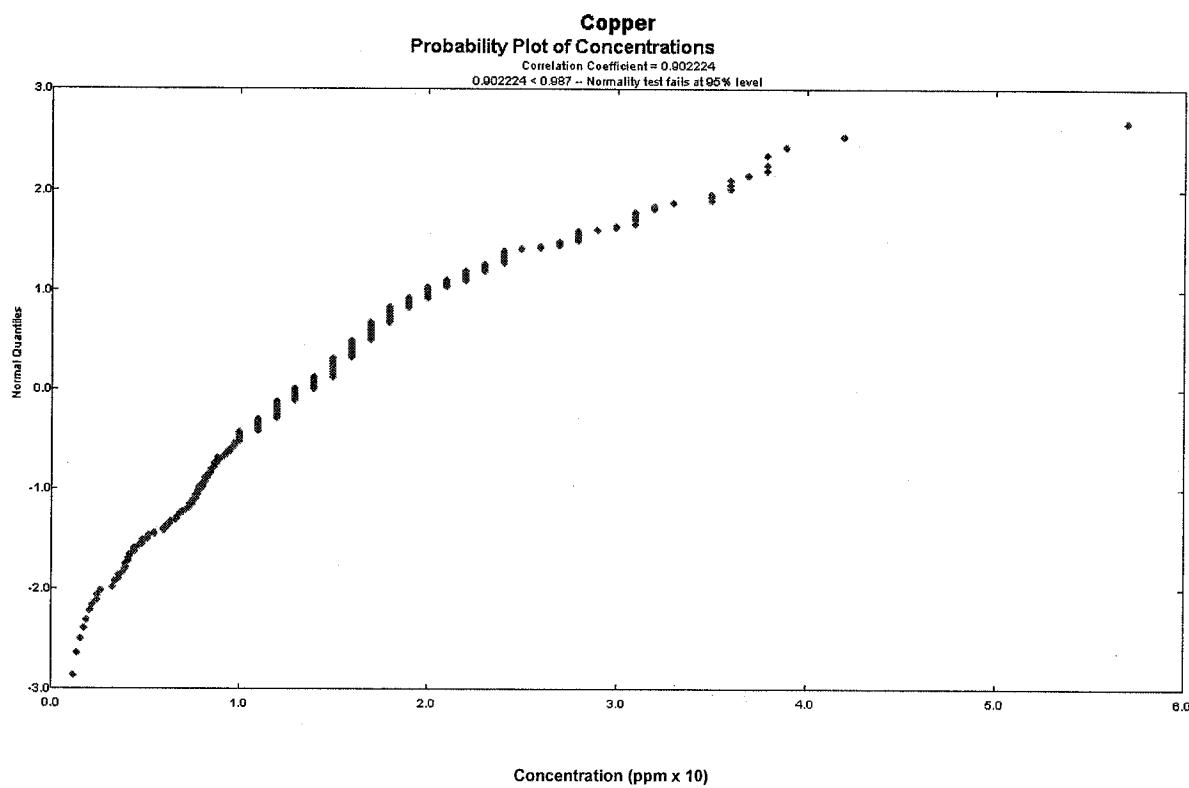
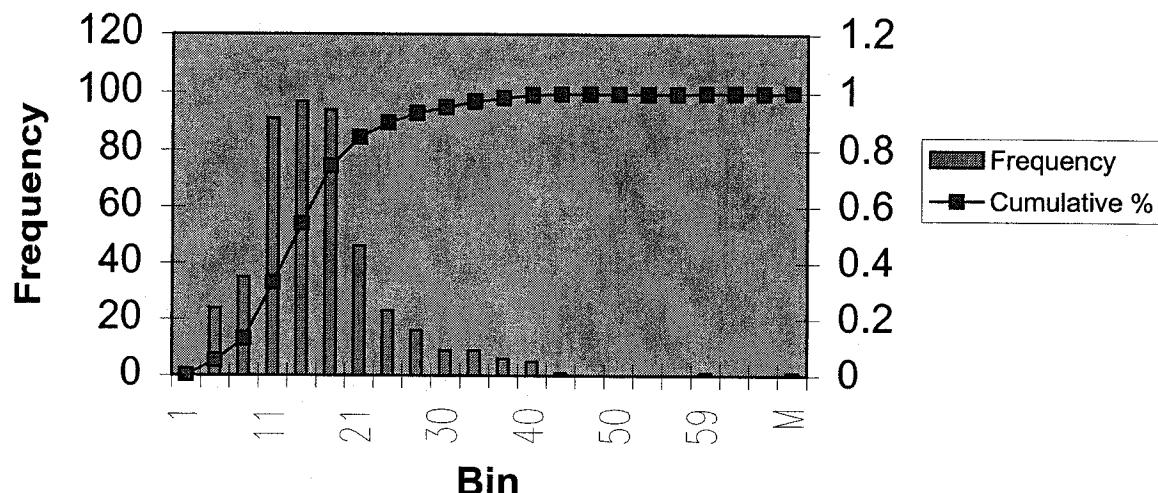
**Copper - Preliminary Facility-
Specific Metals Data Set**

Mean	14.60021786
Standard Error	0.367976899
Median	14
Mode	15
Standard Deviation	7.883642063
Sample Variance	62.15181218
Kurtosis	6.889964015
Skewness	1.788236849
Range	67.8
Minimum	1.2
Maximum	69
Sum	6701.5
Count	459
Largest(1)	69
Smallest(1)	1.2
Confidence Level(95.0%)	0.723133058

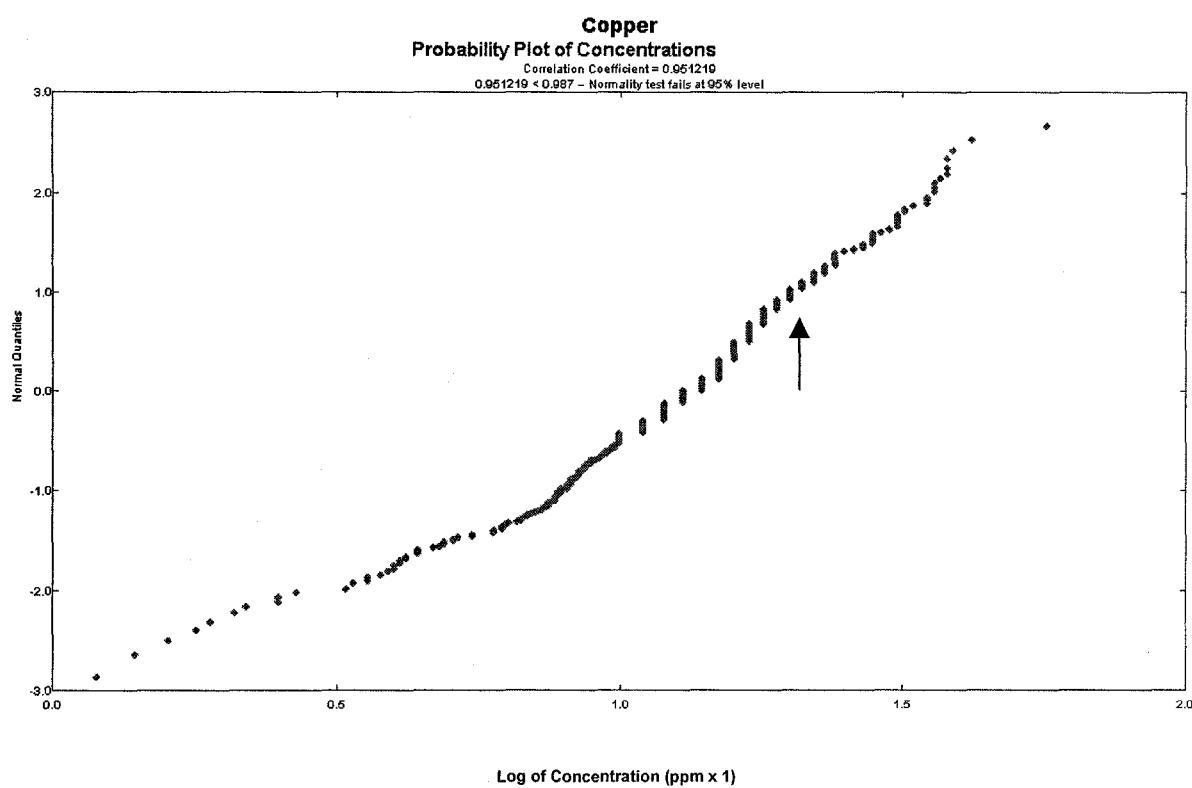
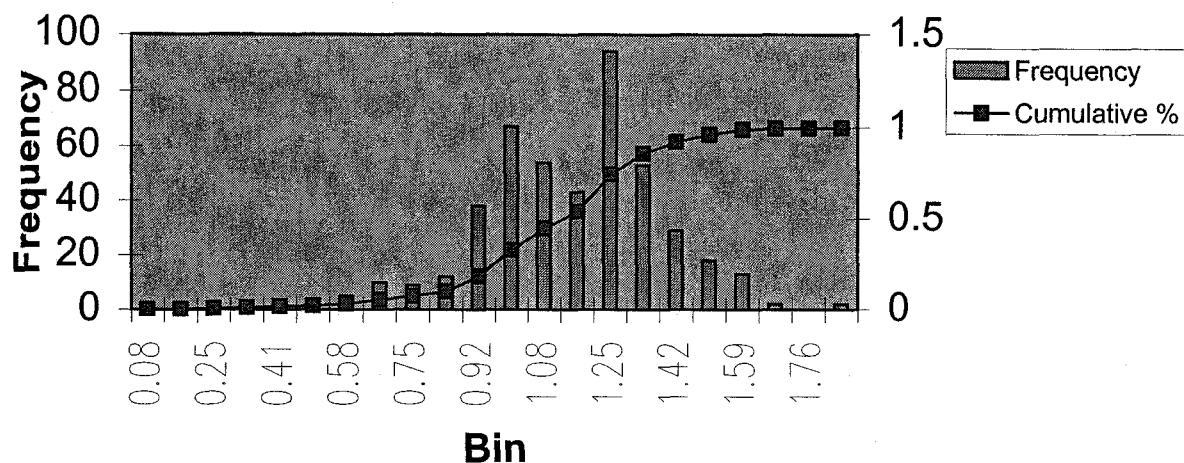
**Copper - Preliminary Facility-
Specific Metals Data Set
Log Transformed**

Mean	1.102529586
Standard Error	0.011445703
Median	1.146128036
Mode	1.176091259
Standard Deviation	0.245216004
Sample Variance	0.060130888
Kurtosis	1.932552321
Skewness	-0.787004347
Range	1.759667845
Minimum	0.079181246
Maximum	1.838849091
Sum	506.0610799
Count	459
Largest(1)	1.838849091
Smallest(1)	0.079181246
Confidence Level(95.0%)	0.022492624

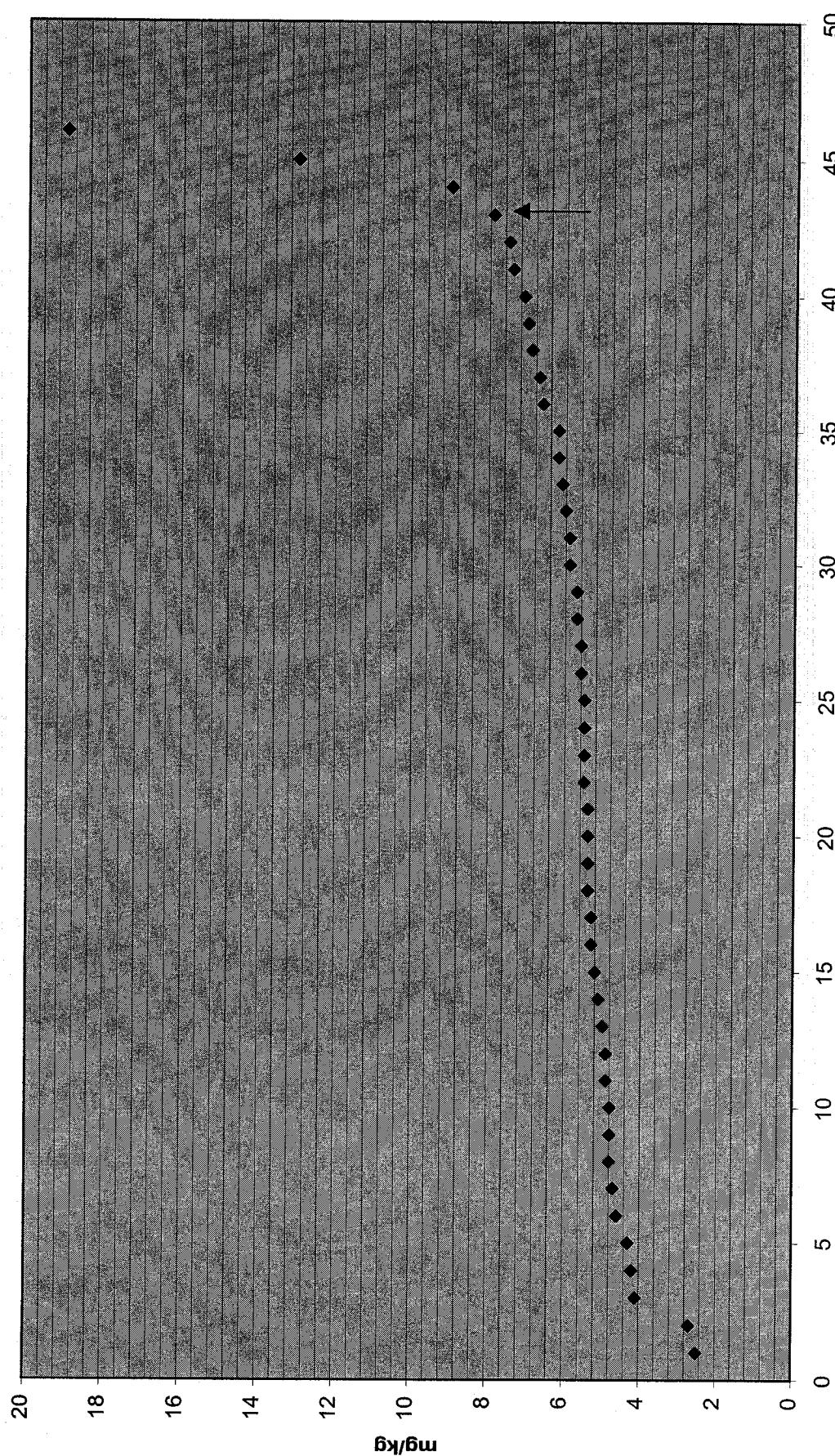
Copper - Preliminary Facility-Specific Metals Data Set



Copper - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Lead - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



Lead - Preliminary Facility-Specific Metals Data Set

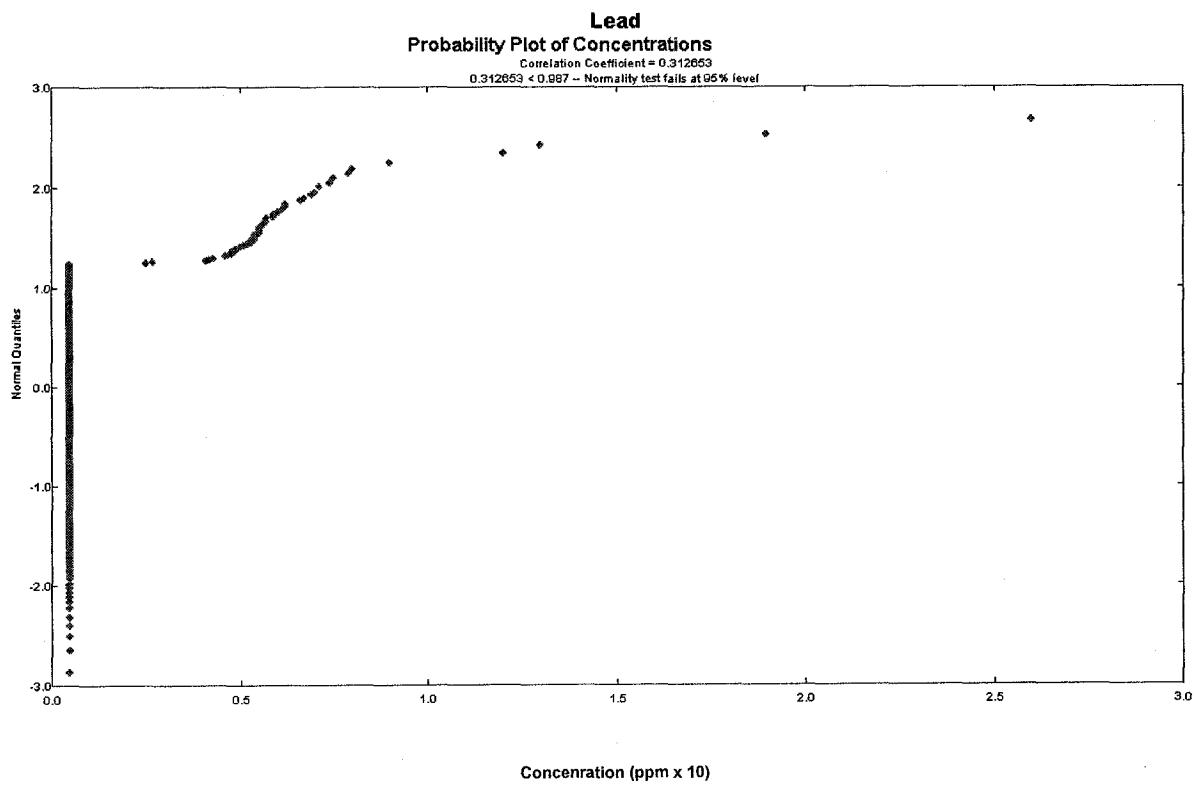
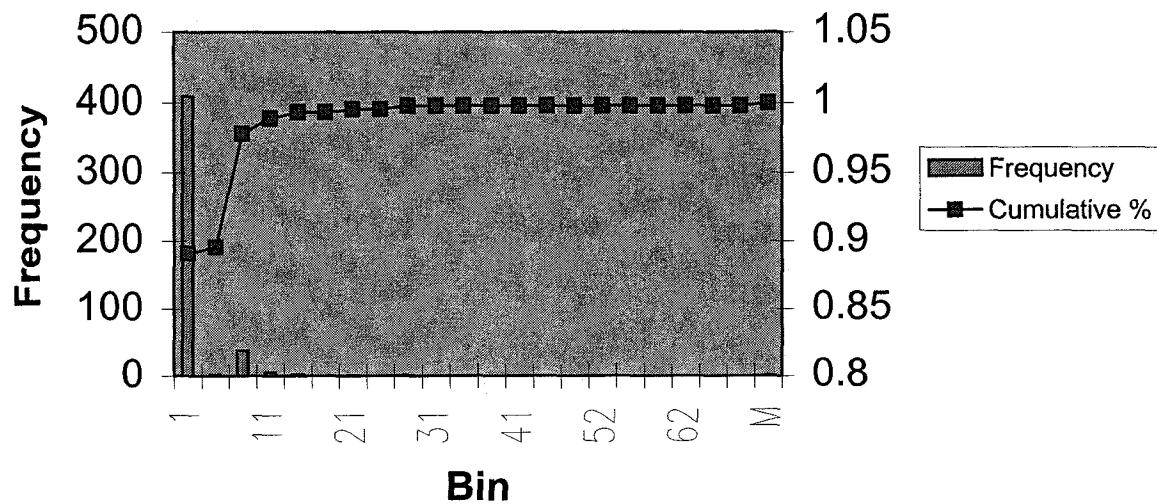
Mean	1.307843137
Standard Error	0.18699922
Median	0.5
Mode	0.5
Standard Deviation	4.00632463
Sample Variance	16.05063704
Kurtosis	215.9450946
Skewness	12.99453853
Range	71.5
Minimum	0.5
Maximum	72
Sum	600.3
Count	459
Largest(1)	72
Smallest(1)	0.5
Confidence Level(95.0%)	0.36748317

Lead - Preliminary Facility-Specific Metals Data Set

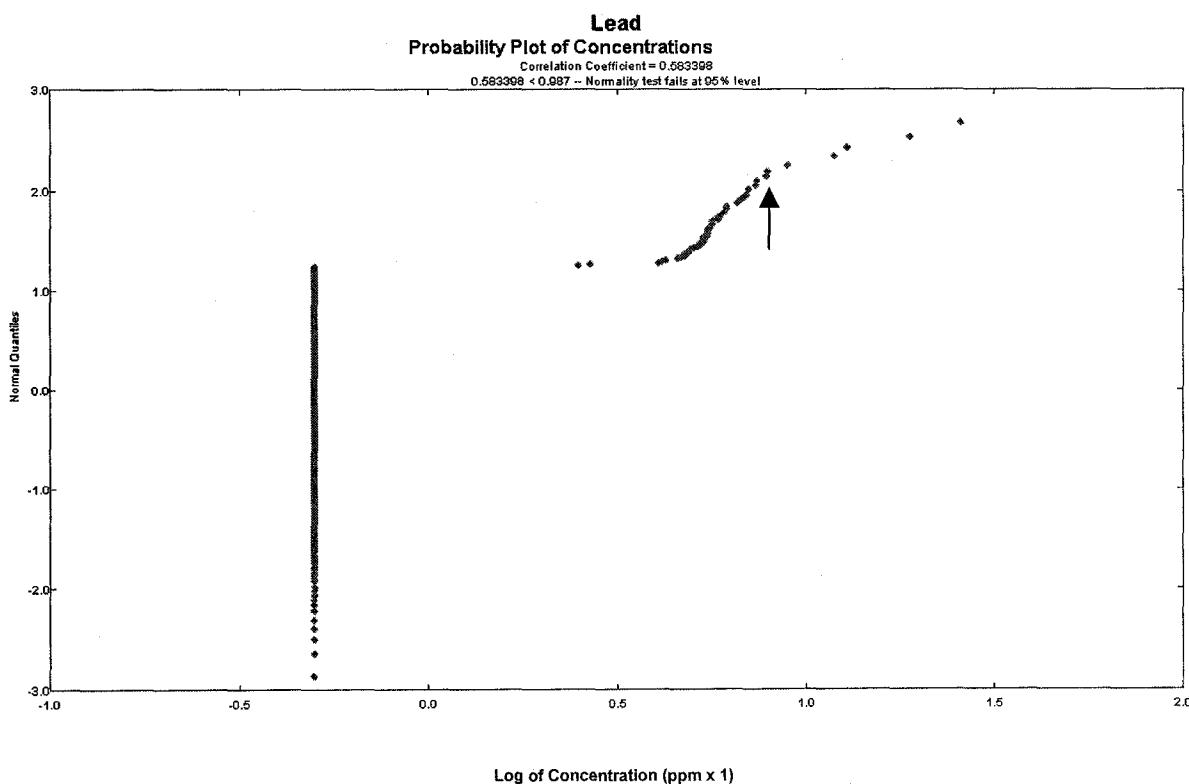
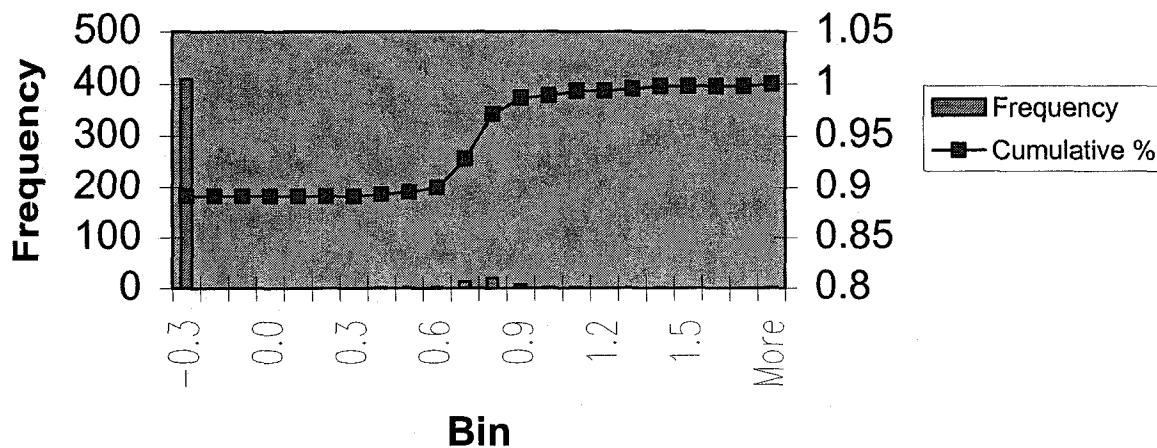
Log Transformed

Mean	-0.181000033
Standard Error	0.016413103
Median	-0.301029996
Mode	-0.301029996
Standard Deviation	0.35163901
Sample Variance	0.123649993
Kurtosis	6.869048989
Skewness	2.800314996
Range	2.158362492
Minimum	-0.301029996
Maximum	1.857332496
Sum	-83.07901514
Count	459
Largest(1)	1.857332496
Smallest(1)	-0.301029996
Confidence Level(95.0%)	0.032254355

Lead - Preliminary Facility Specific Metals Data Set



Lead - Preliminary Facility-Specific Metals Data Set - Log Transformed



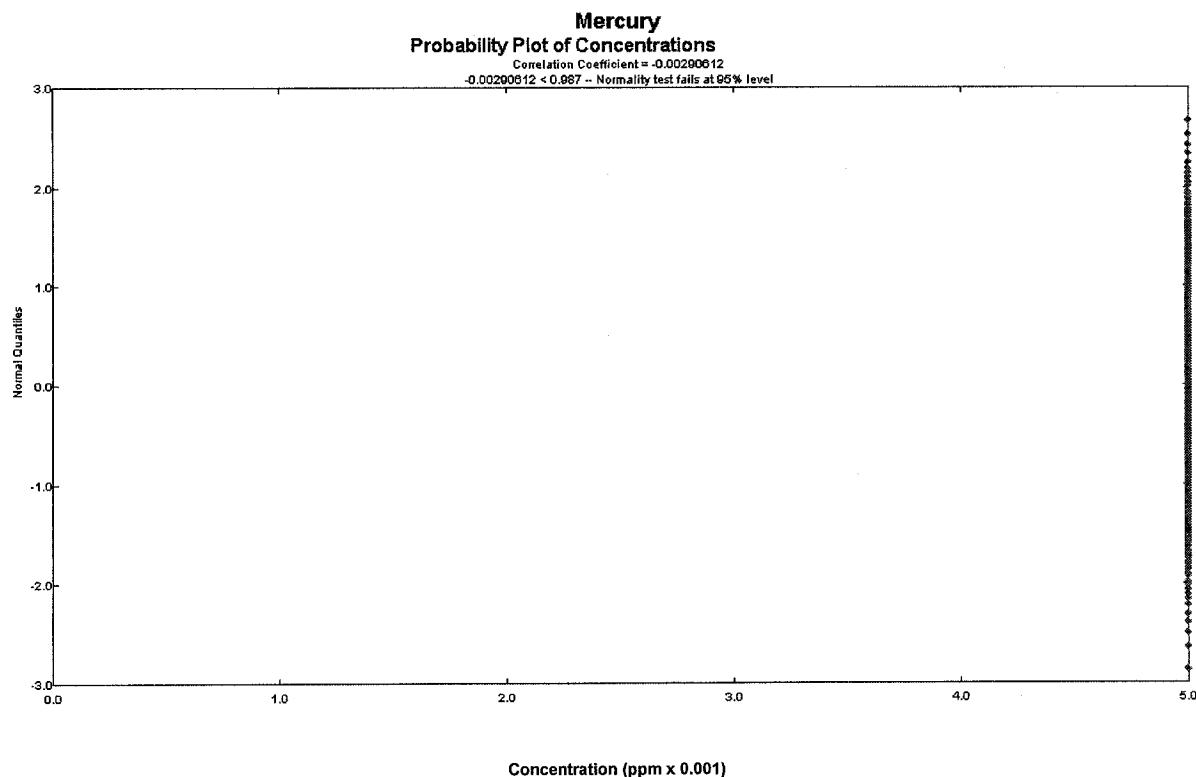
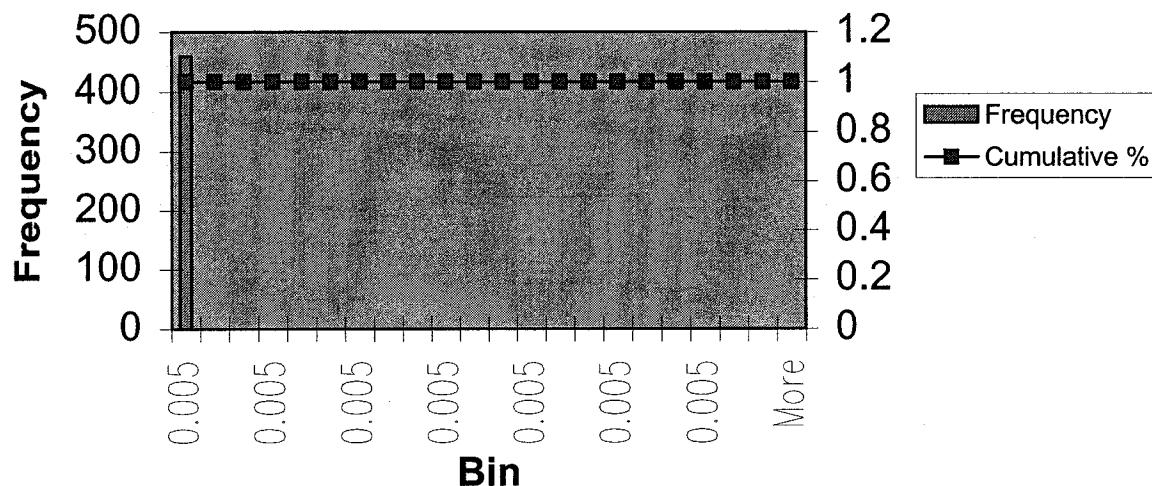
Mercury - Preliminary Facility-Specific Metals Data Set

Mean	0.005
Standard Error	4.01138E-11
Median	0.005
Mode	0.005
Standard Deviation	8.59409E-10
Sample Variance	7.38583E-19
Kurtosis	-2.00877193
Skewness	1.003281679
Range	0
Minimum	0.005
Maximum	0.005
Sum	2.295
Count	459
Largest(1)	0.005
Smallest(1)	0.005
Confidence Level(95.0%)	7.88299E-11

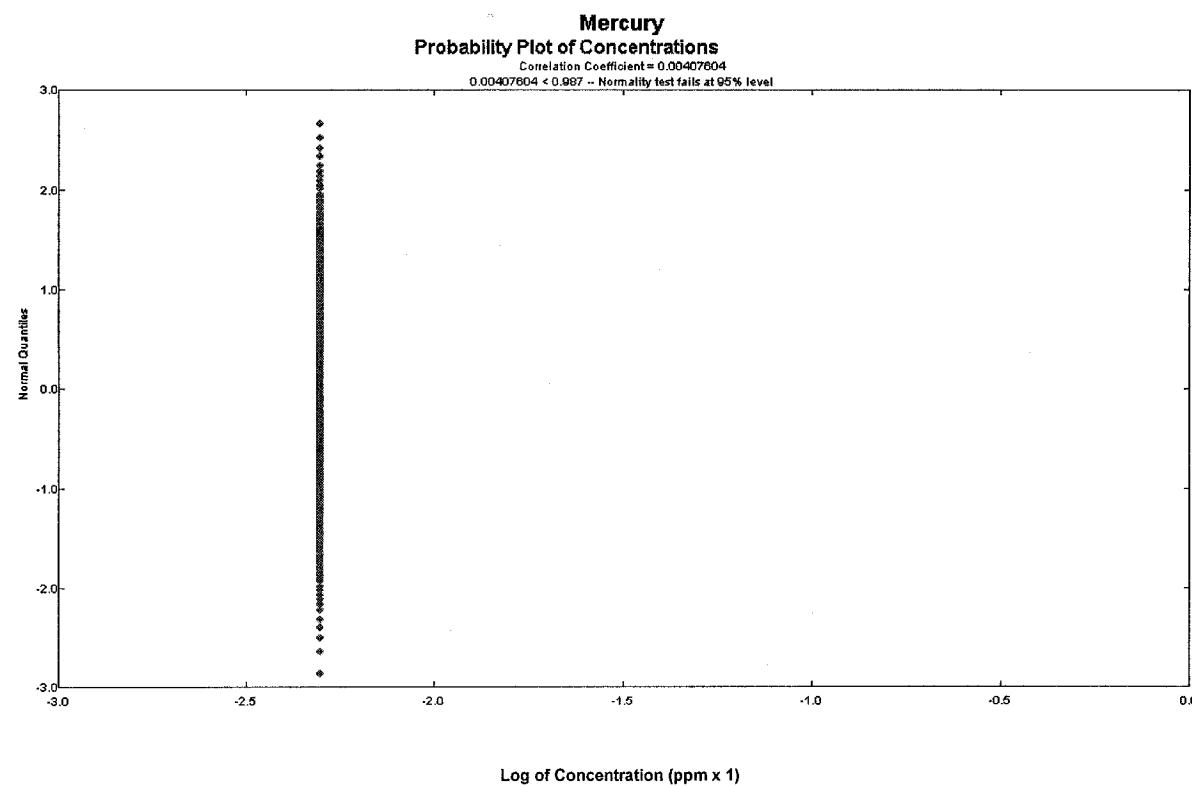
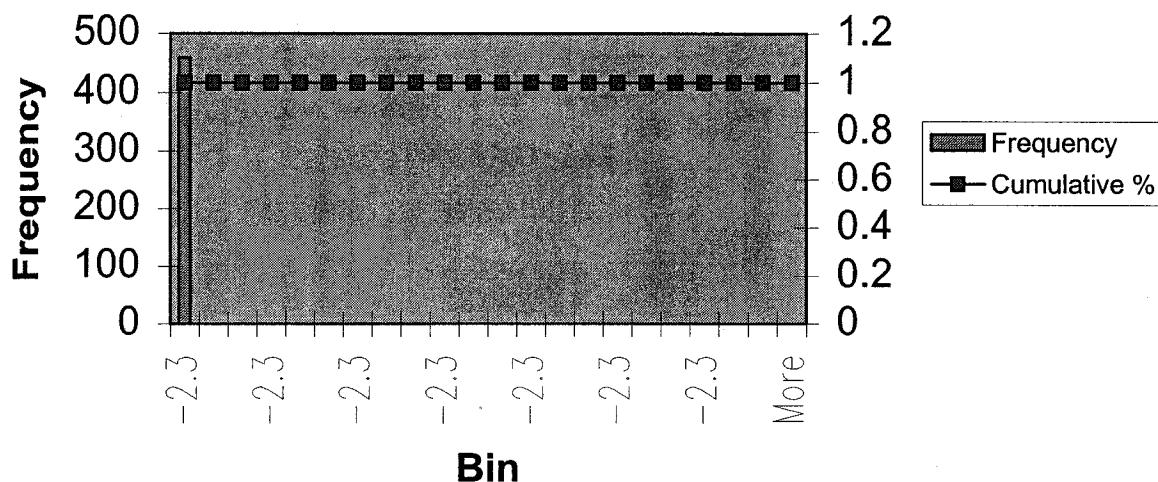
**Mercury - Preliminary Facility-Specific Metals Data Set
Log Transformed**

Mean	-2.301029996
Standard Error	1.38753E-08
Median	-2.301029996
Mode	-2.301029996
Standard Deviation	2.97267E-07
Sample Variance	8.83679E-14
Kurtosis	-2.00877193
Skewness	-1.003281679
Range	0
Minimum	-2.301029996
Maximum	-2.301029996
Sum	-1056.172768
Count	459
Largest(1)	-2.301029996
Smallest(1)	-2.301029996
Confidence Level(95.0%)	2.72671E-08

Mercury - Preliminary Facility-Specific Metals Data Set



Mercury - Preliminary Facility-Specific Metals Data Set - Log Transformed



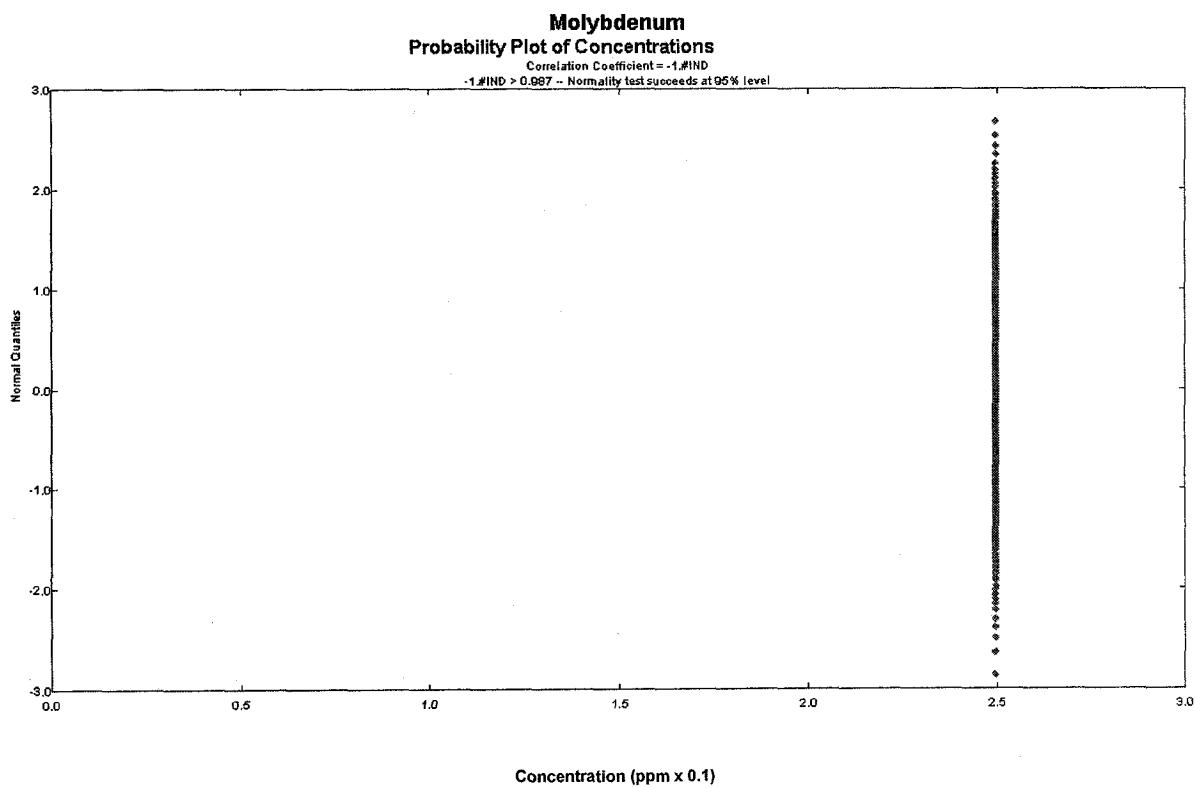
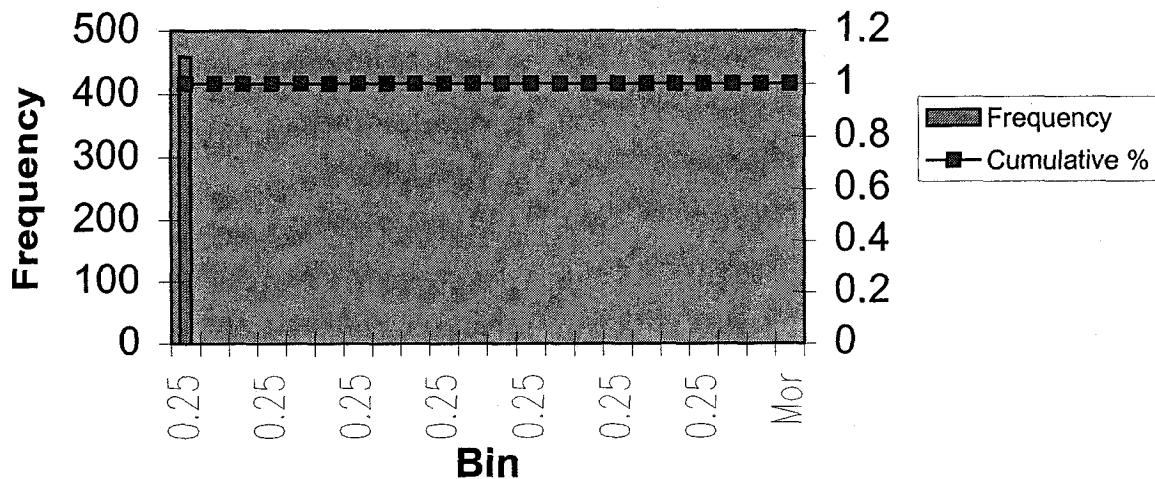
**Molybdenum - Preliminary
Facility-Specific Metals Data Set**

Mean	0.25
Standard Error	0
Median	0.25
Mode	0.25
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	0.25
Maximum	0.25
Sum	114.75
Count	459
Largest(1)	0.25
Smallest(1)	0.25
Confidence Level(95.0%)	0

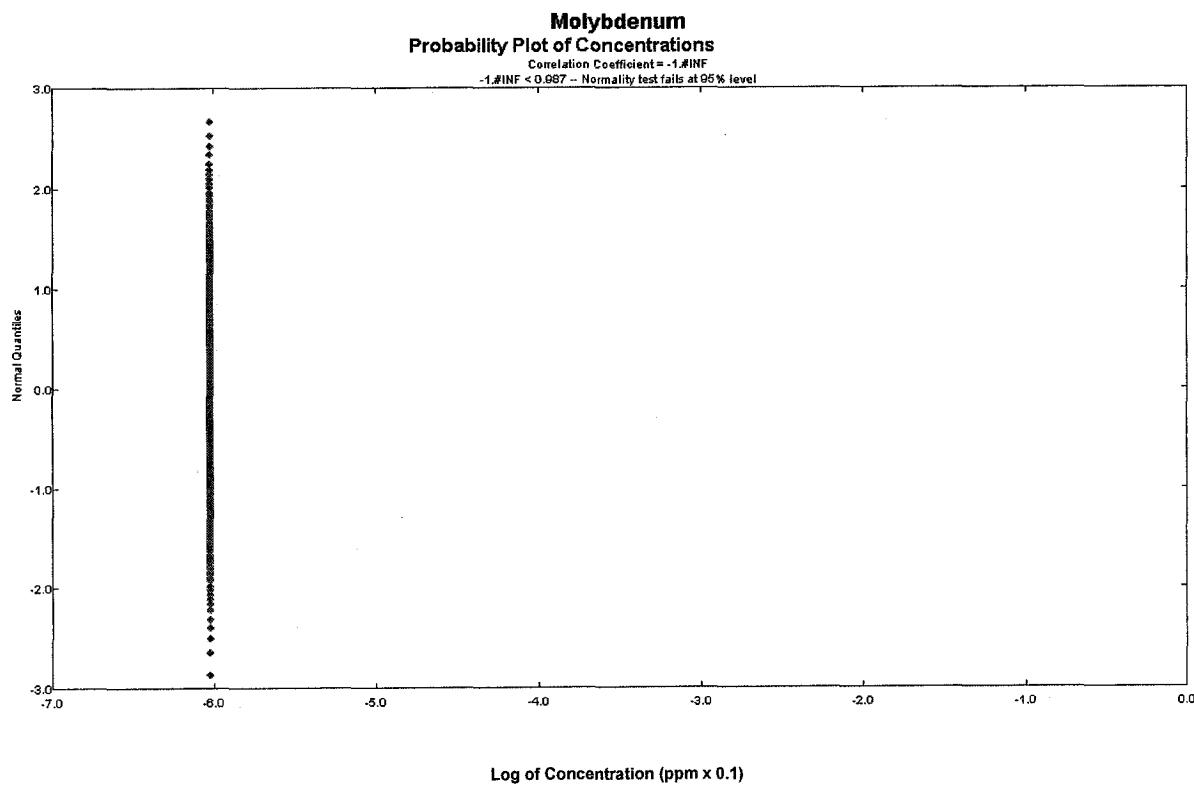
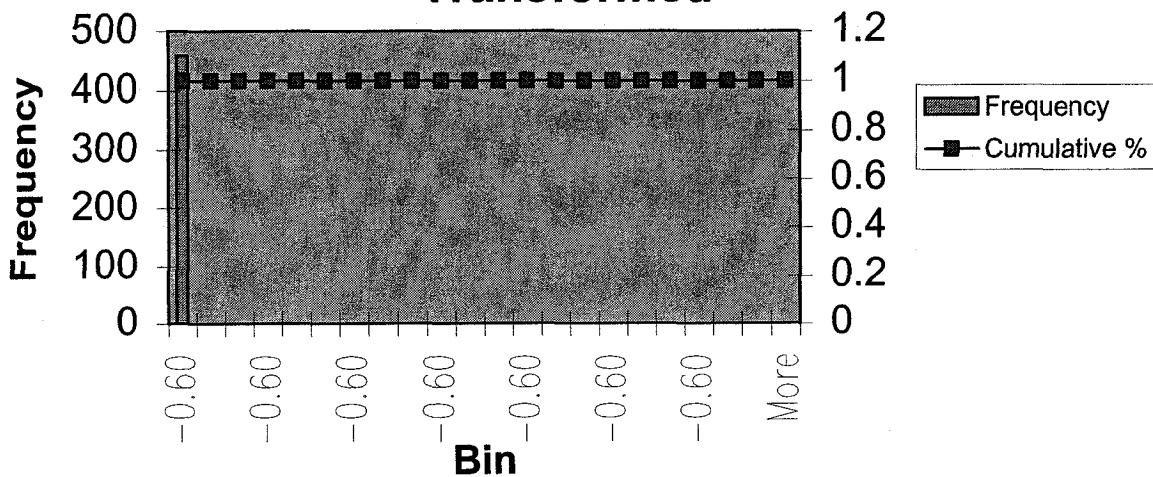
**Molybdenum - Preliminary Facility-Specific Metals Data Set
Log Transformed**

Mean	-0.602059991
Standard Error	0
Median	-0.602059991
Mode	-0.602059991
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	-0.602059991
Maximum	-0.602059991
Sum	-276.345536
Count	459
Largest(1)	-0.602059991
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0

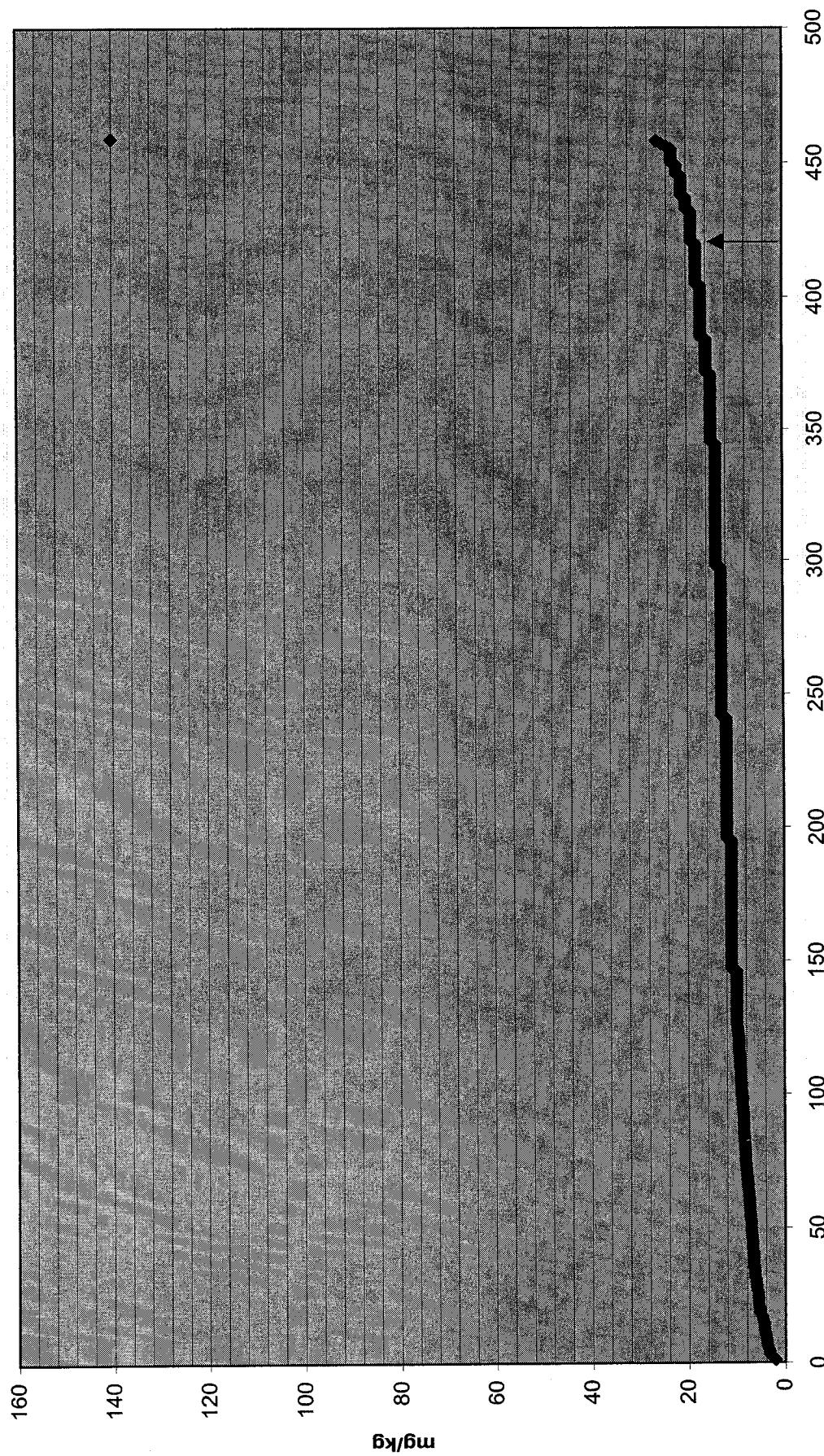
Molybdenum - Preliminary Facility-Specific Metals Data Set



Molybdenum - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Nickel - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



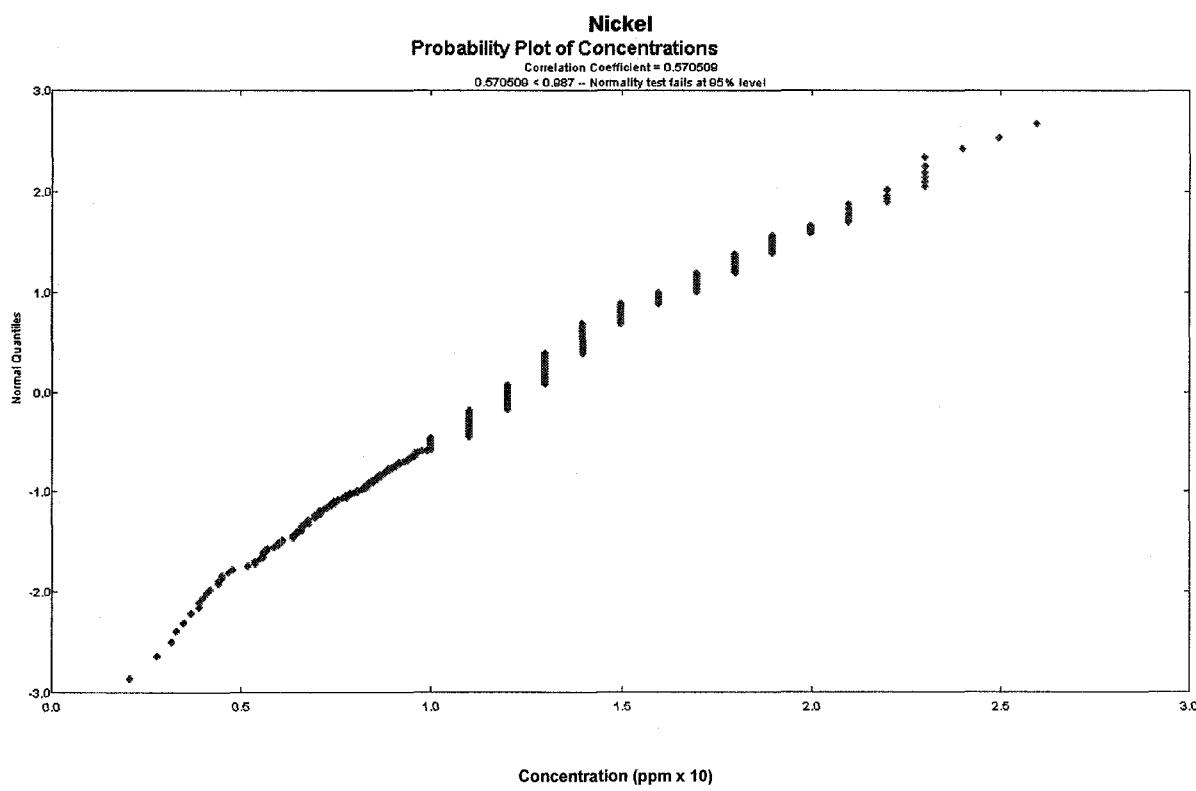
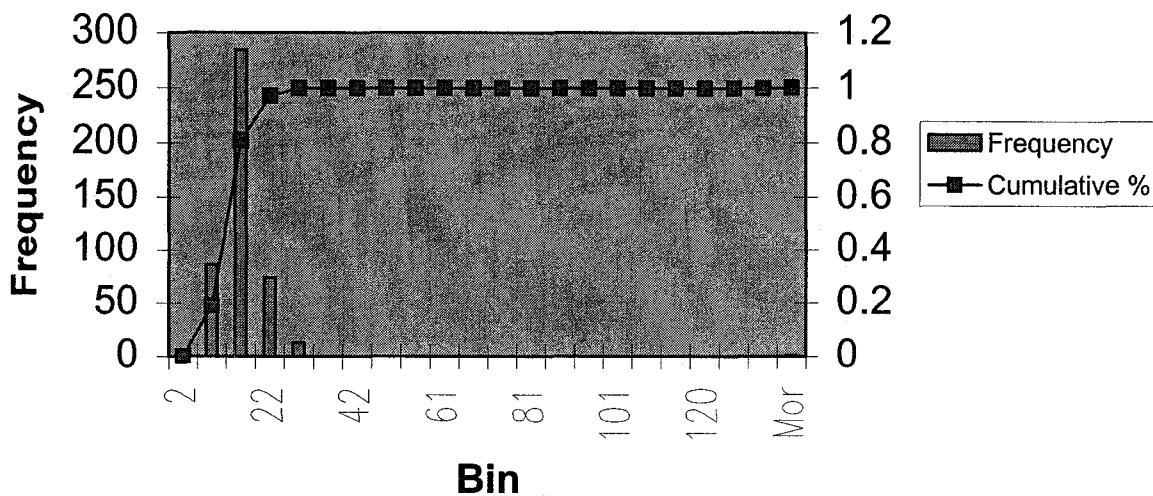
**Nickel - Preliminary Facility-Specific
Metals Data Set**

Mean	12.5962963
Standard Error	0.3410742
Median	12
Mode	13
Standard Deviation	7.307270965
Sample Variance	53.39620896
Kurtosis	201.7575984
Skewness	11.65155344
Range	137.9
Minimum	2.1
Maximum	140
Sum	5781.7
Count	459
Largest(1)	140
Smallest(1)	2.1
Confidence Level(95.0%)	0.670264981

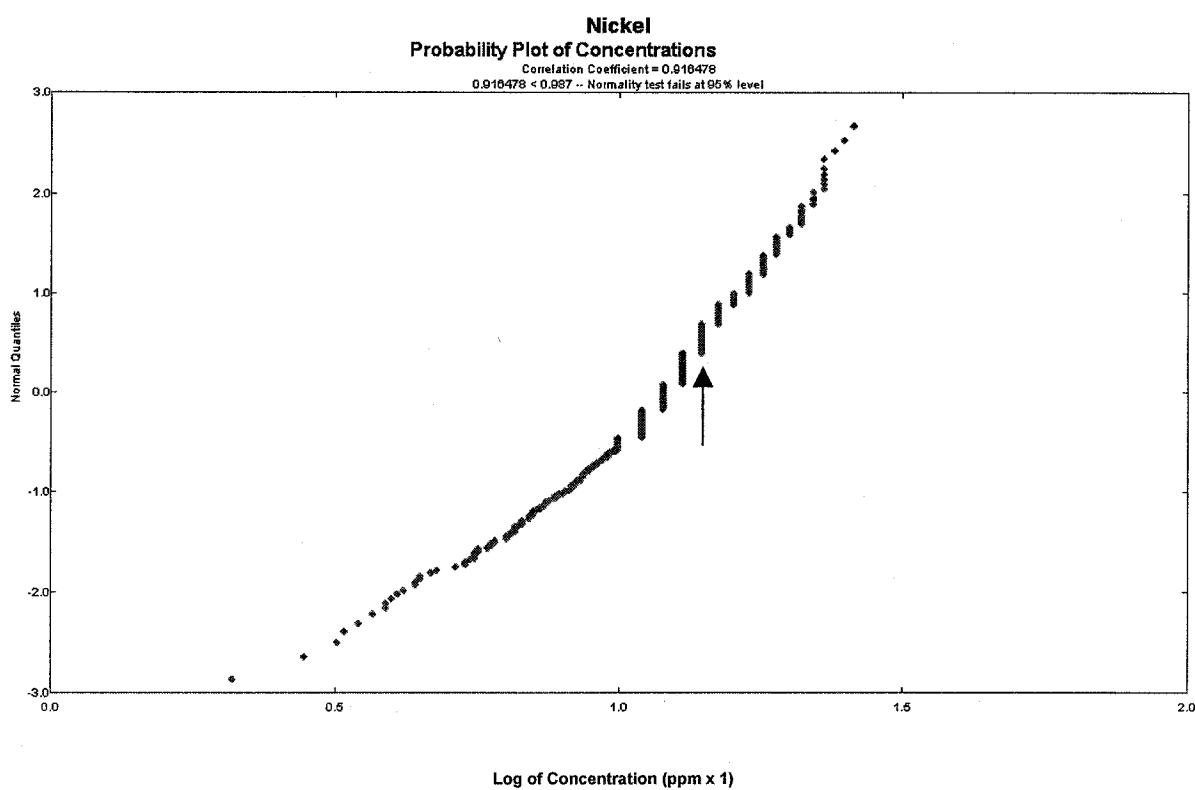
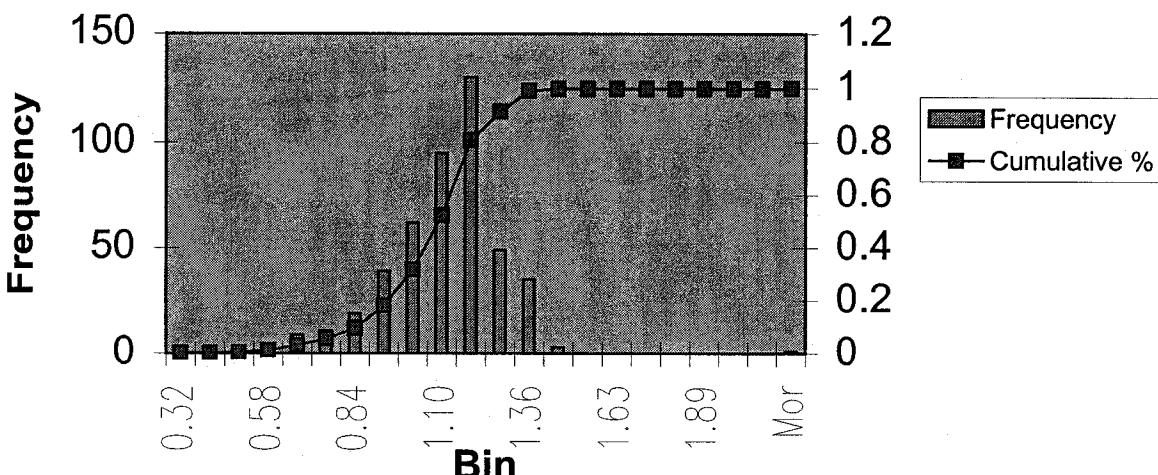
**Nickel - Preliminary Facility-Specific Metals Data Set
Log Transformed**

Mean	1.063951072
Standard Error	0.008154548
Median	1.079181246
Mode	1.113943352
Standard Deviation	0.174705368
Sample Variance	0.030521966
Kurtosis	4.082004492
Skewness	-0.318704324
Range	1.823908741
Minimum	0.322219295
Maximum	2.146128036
Sum	488.353542
Count	459
Largest(1)	2.146128036
Smallest(1)	0.322219295
Confidence Level(95.0%)	0.016024983

Nickel - Preliminary Facility-Specific Metals Data Set



Nickel - Preliminary Facility-Specific Metals Data Set - Log Transformed



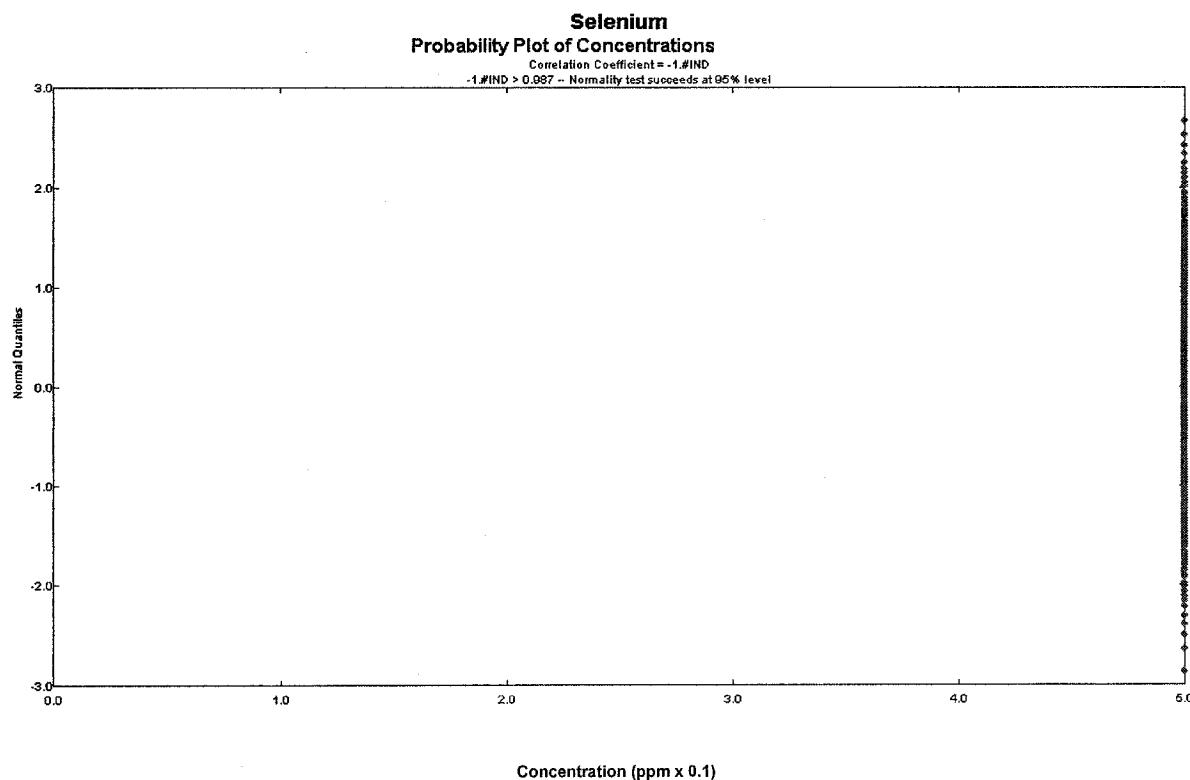
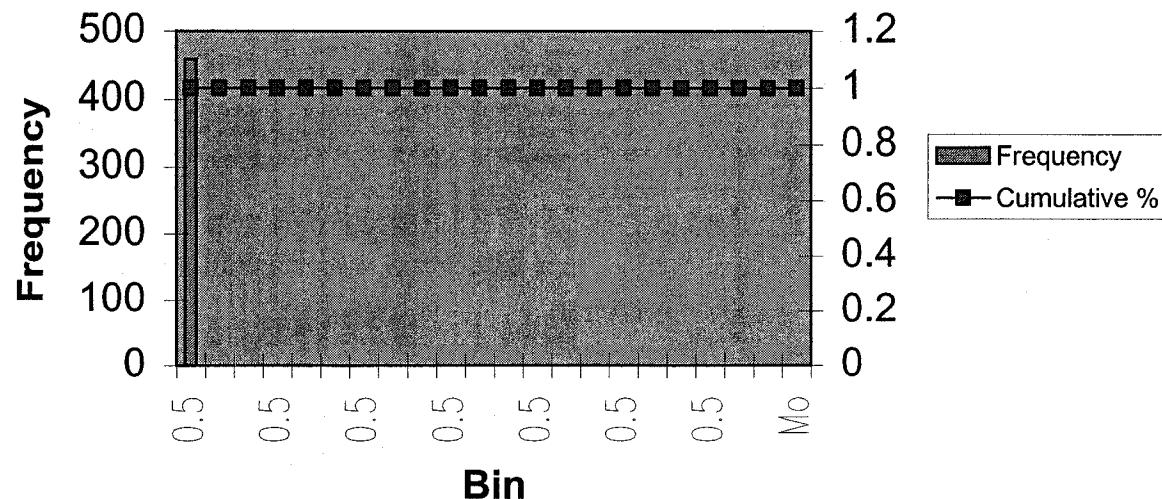
Selenium - Preliminary Facility-Specific Metals Data Set

Mean	0.5
Standard Error	0
Median	0.5
Mode	0.5
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	0.5
Maximum	0.5
Sum	229.5
Count	459
Largest(1)	0.5
Smallest(1)	0.5
Confidence Level(95.0%)	0

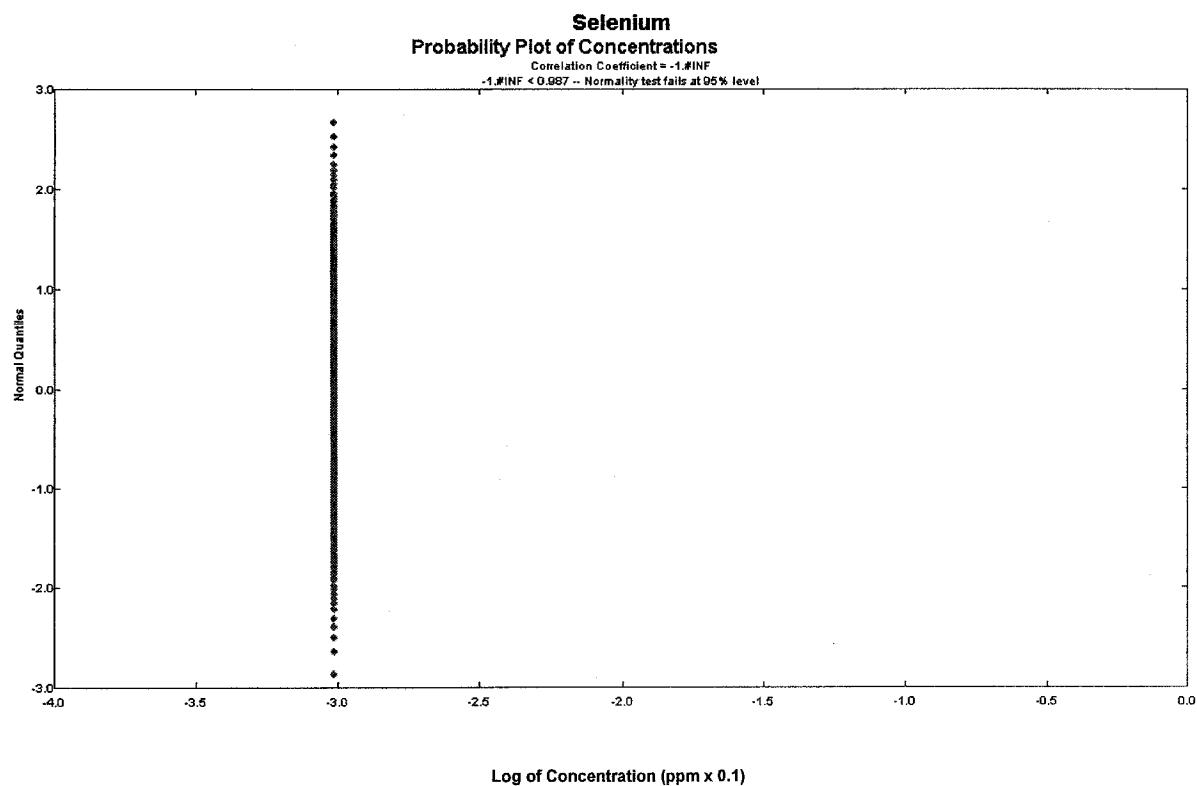
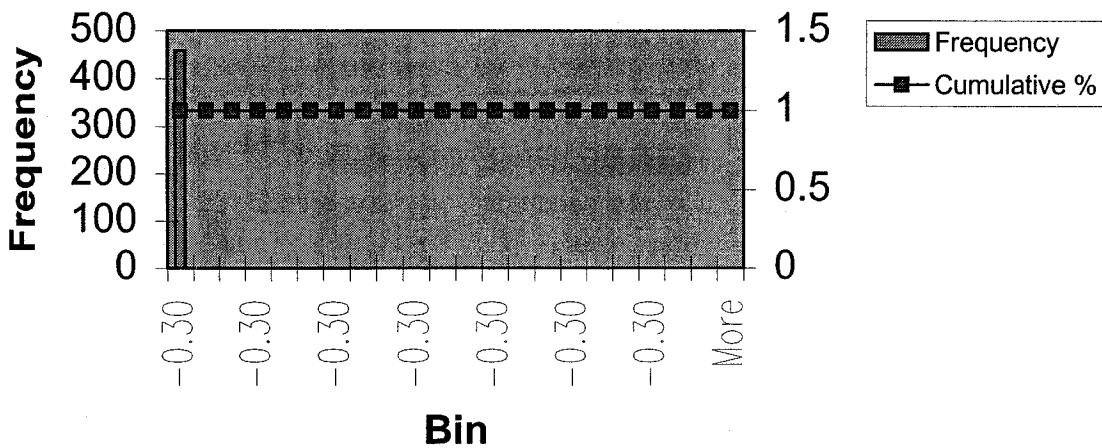
Selenium - Preliminary Facility-Specific Metals Data Set Log Transformed

Mean	-0.301029996
Standard Error	0
Median	-0.301029996
Mode	-0.301029996
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	-0.301029996
Maximum	-0.301029996
Sum	-138.172768
Count	459
Largest(1)	-0.301029996
Smallest(1)	-0.301029996
Confidence Level(95.0%)	0

Selenium - Preliminary Facility-Specific Metals Data Set



Selenium - Preliminary Facility Specific Metals Data Set - Log Transformed



Silver - Preliminary Facility-Specific Metals Data Set

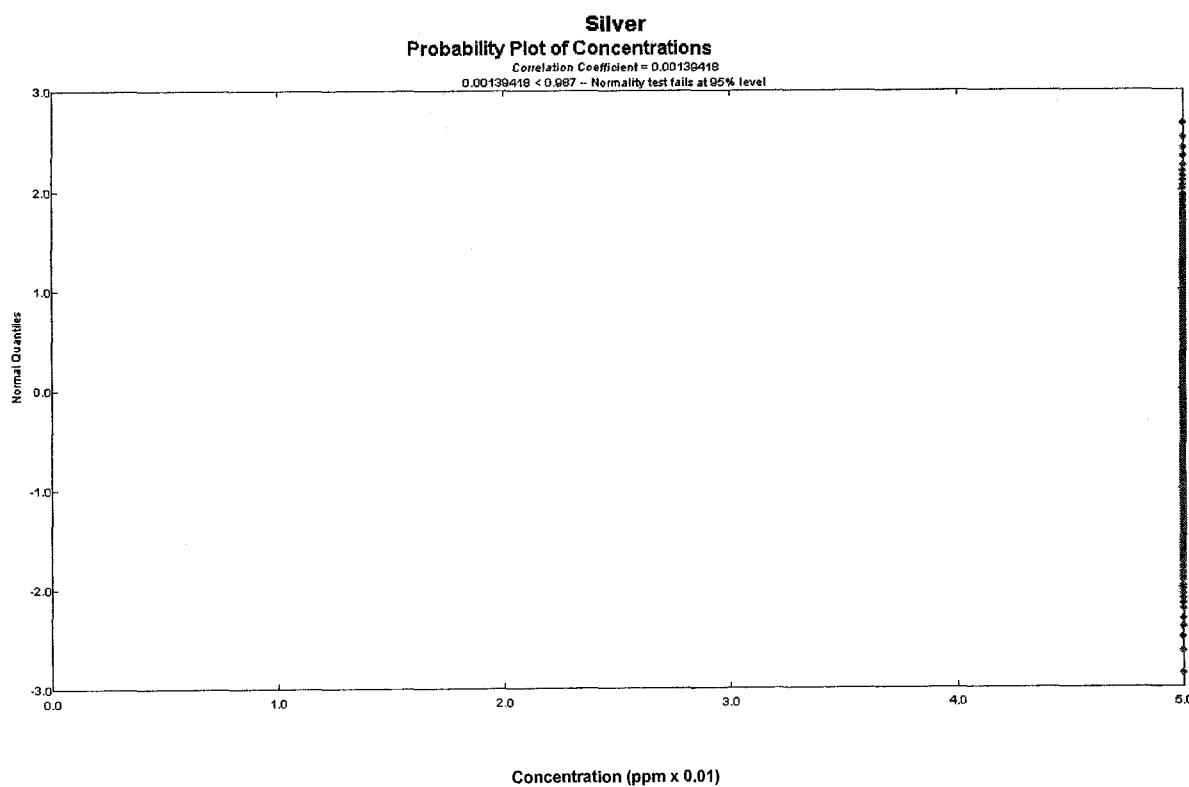
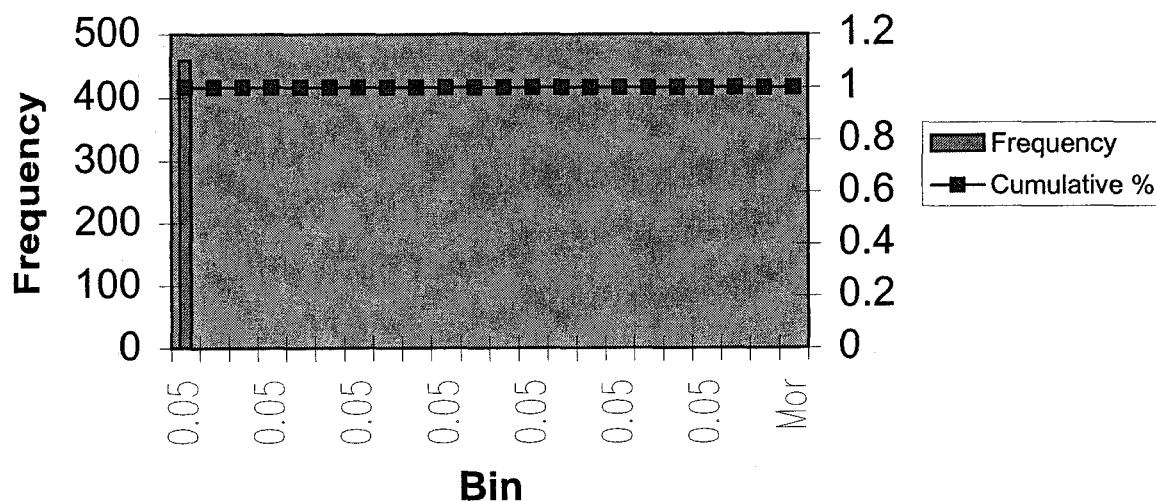
Mean	0.05
Standard Error	0
Median	0.05
Mode	0.05
Standard Deviation	0
Sample Variance	0
Kurtosis	-2.00877193
Skewness	-1.003281679
Range	0
Minimum	0.05
Maximum	0.05
Sum	22.95
Count	459
Largest(1)	0.05
Smallest(1)	0.05
Confidence Level(95.0%)	0

Silver - Preliminary Facility-Specific Metals Data Set

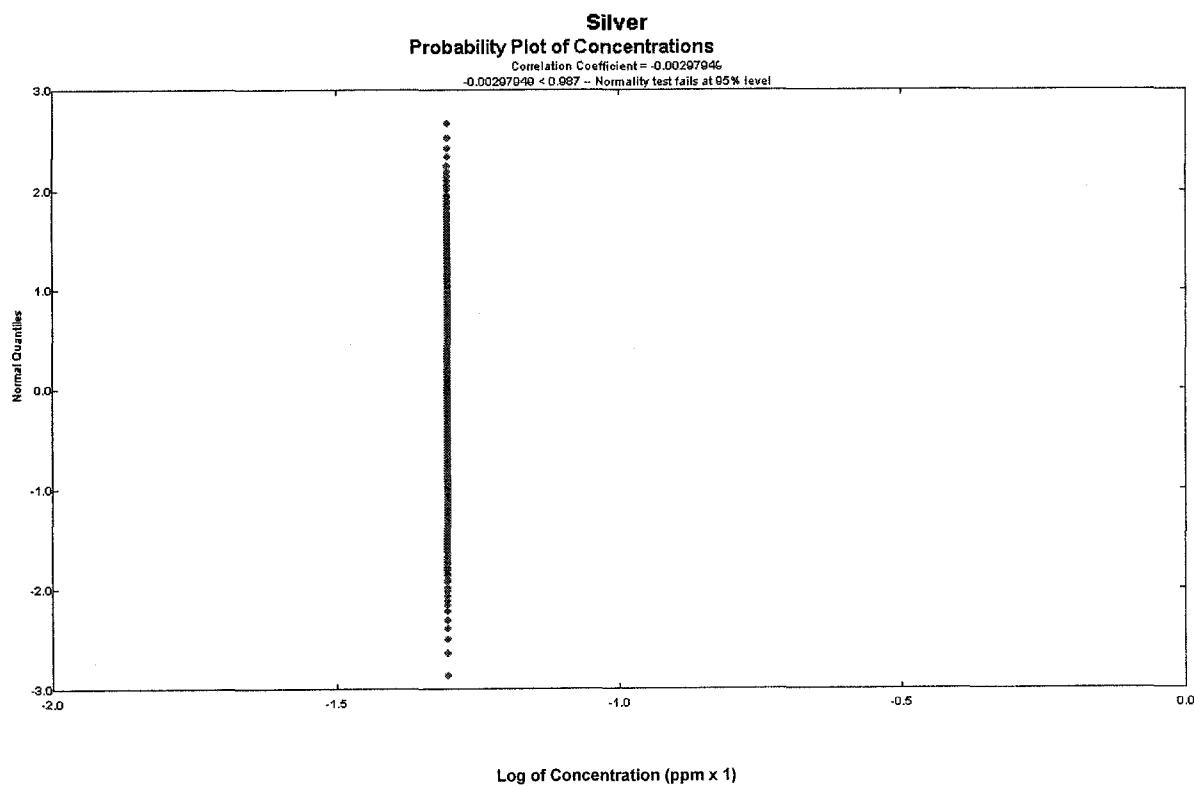
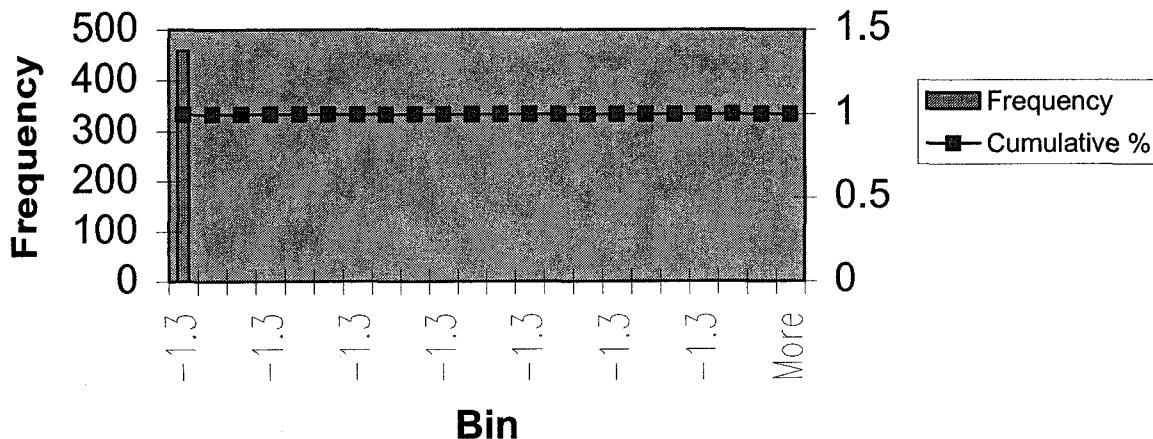
Log Transformed

Mean	-1.301029996
Standard Error	7.85179E-09
Median	-1.301029996
Mode	-1.301029996
Standard Deviation	1.68219E-07
Sample Variance	2.82976E-14
Kurtosis	-2.00877193
Skewness	-1.003281679
Range	0
Minimum	-1.301029996
Maximum	-1.301029996
Sum	-597.172768
Count	459
Largest(1)	-1.301029996
Smallest(1)	-1.301029996
Confidence Level(95.0%)	1.543E-08

Silver - Preliminary Facility-Specific Metals Data Set



Silver - Preliminary Facility-Specific Metals Data Set - Log Transformed



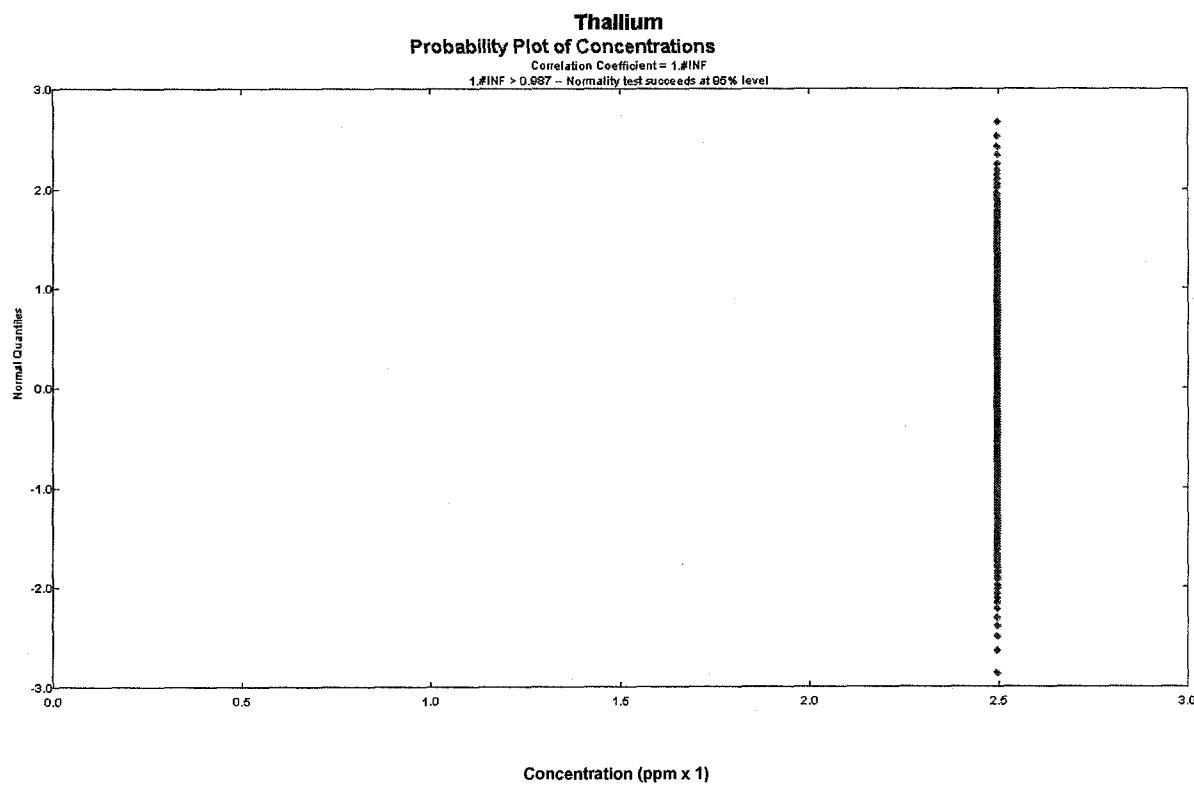
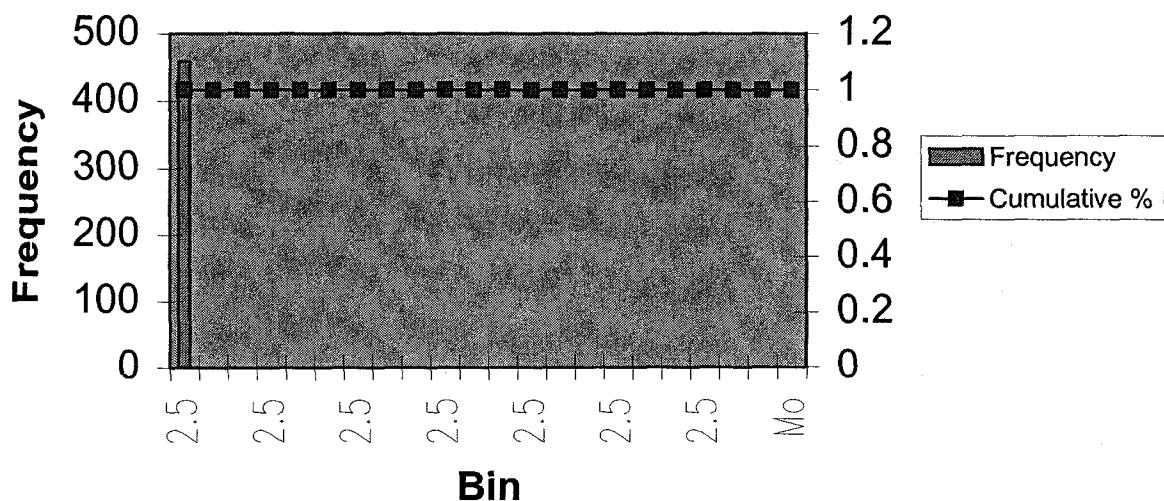
**Thallium - Preliminary Facility-
Specific Metals Data Set**

Mean	2.5
Standard Error	0
Median	2.5
Mode	2.5
Standard Deviation	0
Sample Variance	0
Kurtosis	#DIV/0!
Skewness	#DIV/0!
Range	0
Minimum	2.5
Maximum	2.5
Sum	1147.5
Count	459
Largest(1)	2.5
Smallest(1)	2.5
Confidence Level(95.0%)	0

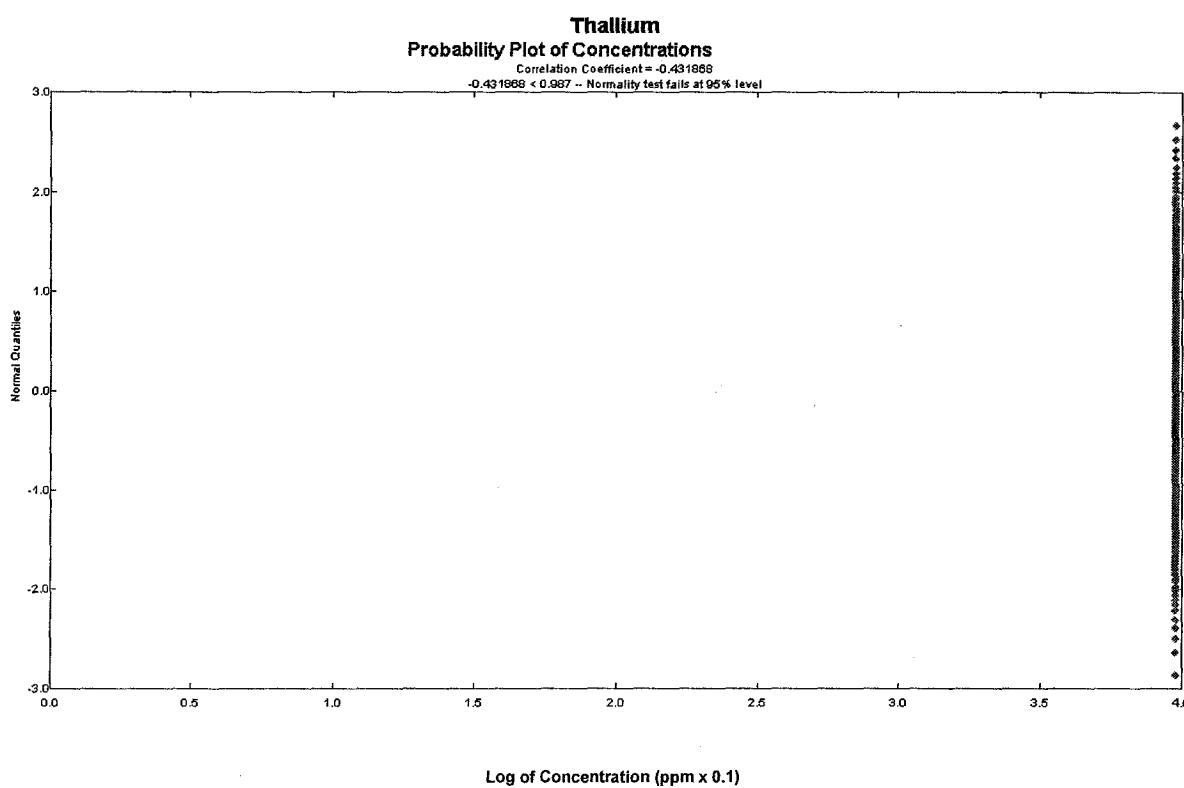
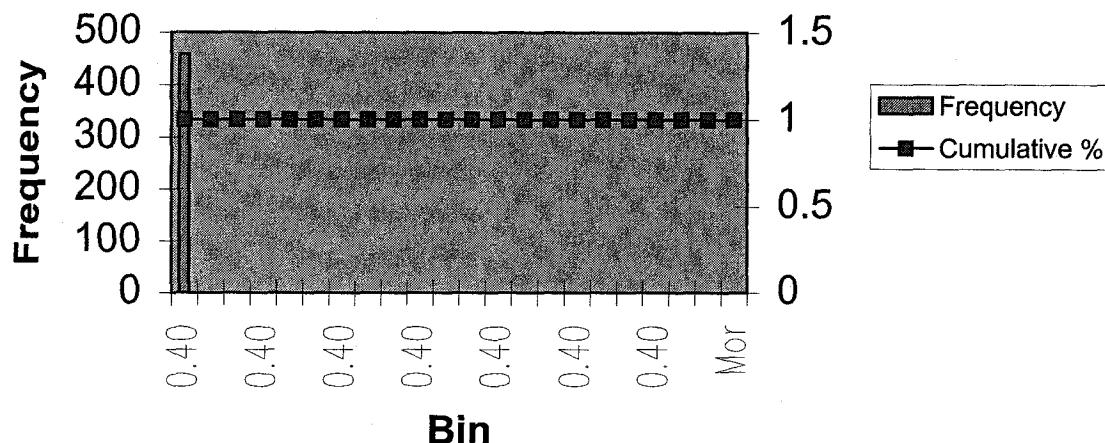
**Thallium - Preliminary Facility-
Specific Metals Data Set
Log Transformed**

Mean	0.397940009
Standard Error	0
Median	0.397940009
Mode	0.397940009
Standard Deviation	0
Sample Variance	0
Kurtosis	-2.00877193
Skewness	1.003281679
Range	0
Minimum	0.397940009
Maximum	0.397940009
Sum	182.654464
Count	459
Largest(1)	0.397940009
Smallest(1)	0.397940009
Confidence Level(95.0%)	0

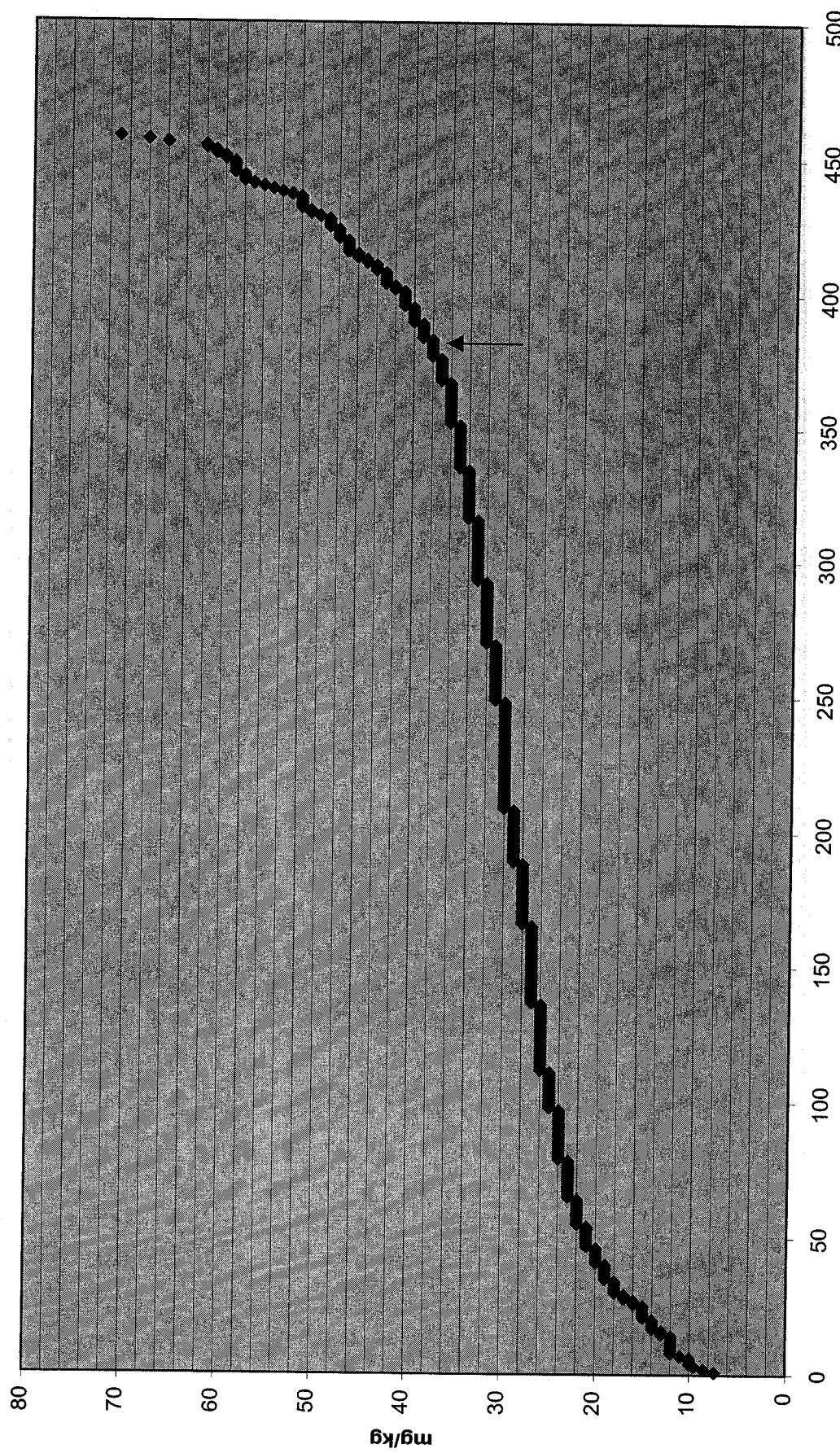
Thallium - Preliminary Facility-Specific Metals Data Set



Thallium - Preliminary Facility-Specific Metals Data Set - Log Transformed



**Vanadium - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)**



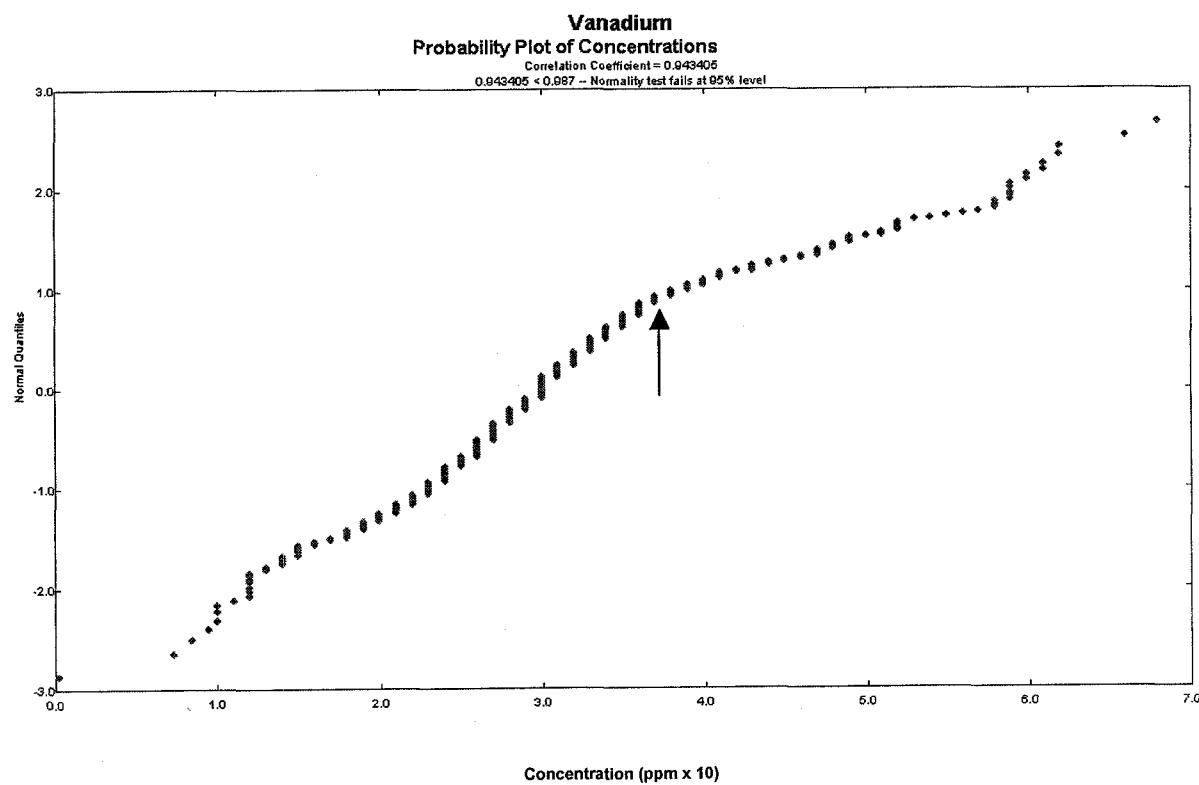
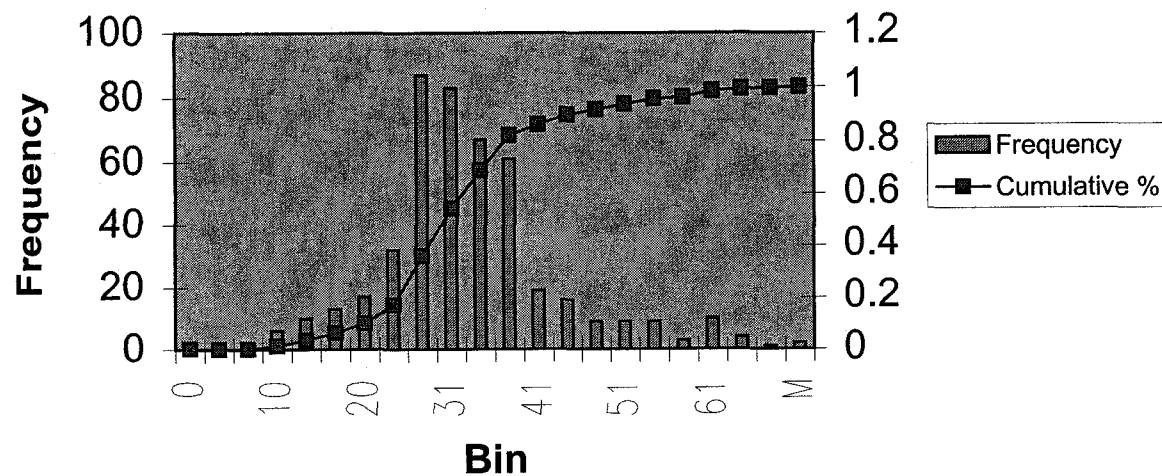
Vanadium - Preliminary Facility-Specific Metals Data Set

Mean	31.18877996
Standard Error	0.485353914
Median	30
Mode	30
Standard Deviation	10.39836071
Sample Variance	108.1259055
Kurtosis	1.69823598
Skewness	0.851028288
Range	70.75
Minimum	0.25
Maximum	71
Sum	14315.65
Count	459
Largest(1)	71
Smallest(1)	0.25
Confidence Level(95.0%)	0.953797536

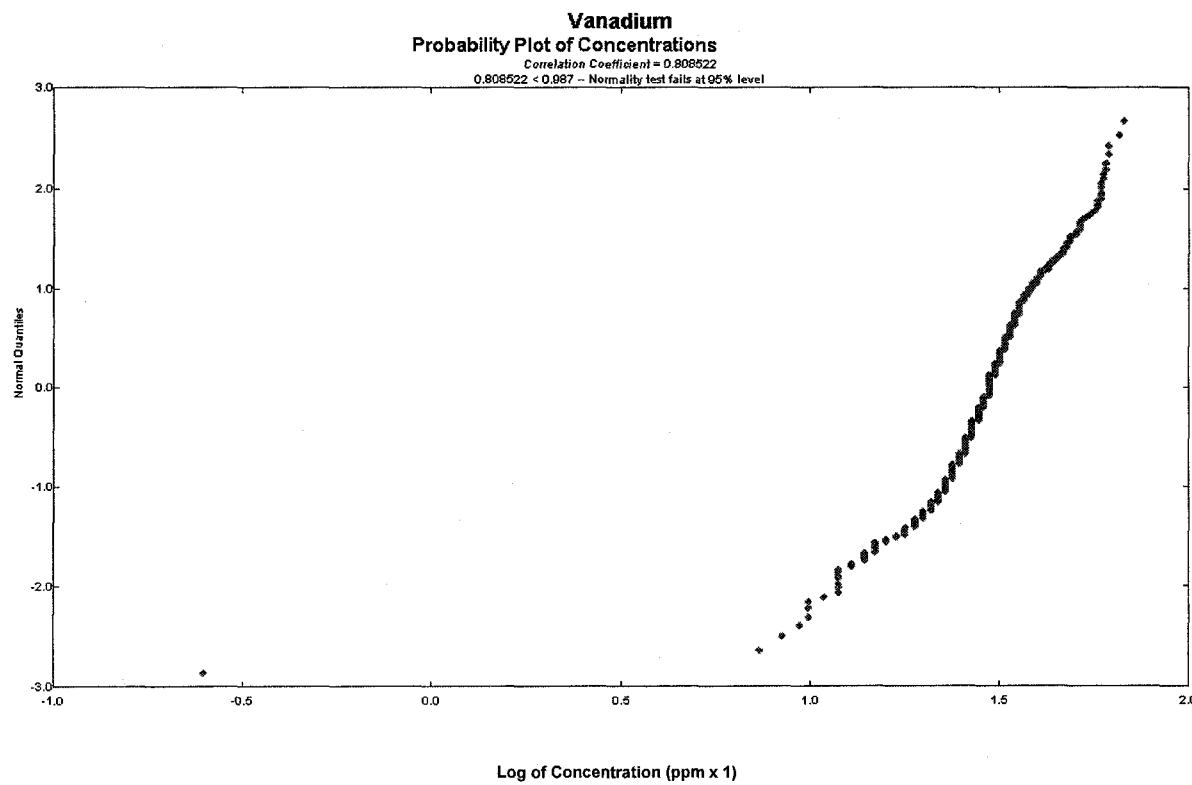
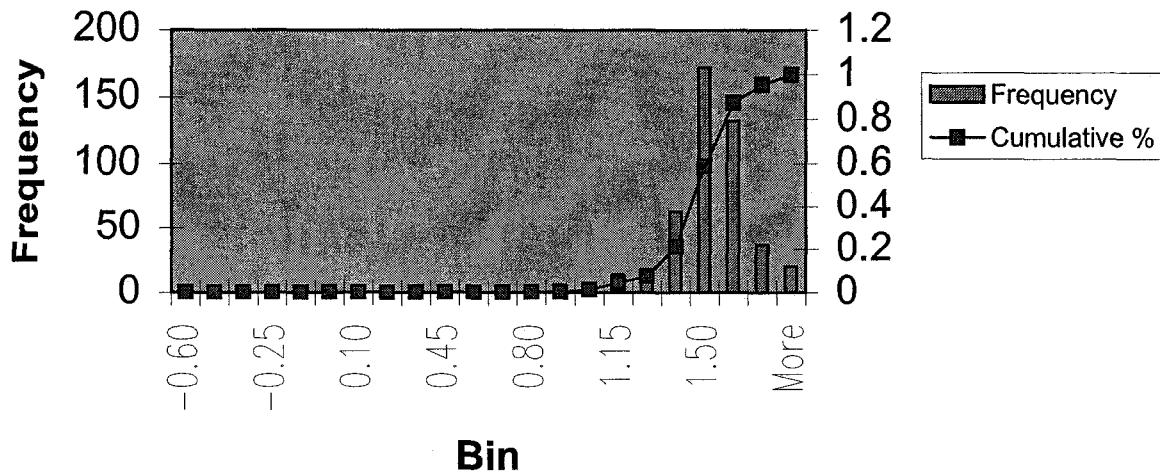
Vanadium - Preliminary Facility-Specific Metals Data Set Log Transformed

Mean	1.466548191
Standard Error	0.0082576
Median	1.477121255
Mode	1.477121255
Standard Deviation	0.176913182
Sample Variance	0.031298274
Kurtosis	40.69851741
Skewness	-3.818512522
Range	2.45331834
Minimum	-0.602059991
Maximum	1.851258349
Sum	673.1456195
Count	459
Largest(1)	1.851258349
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.016227496

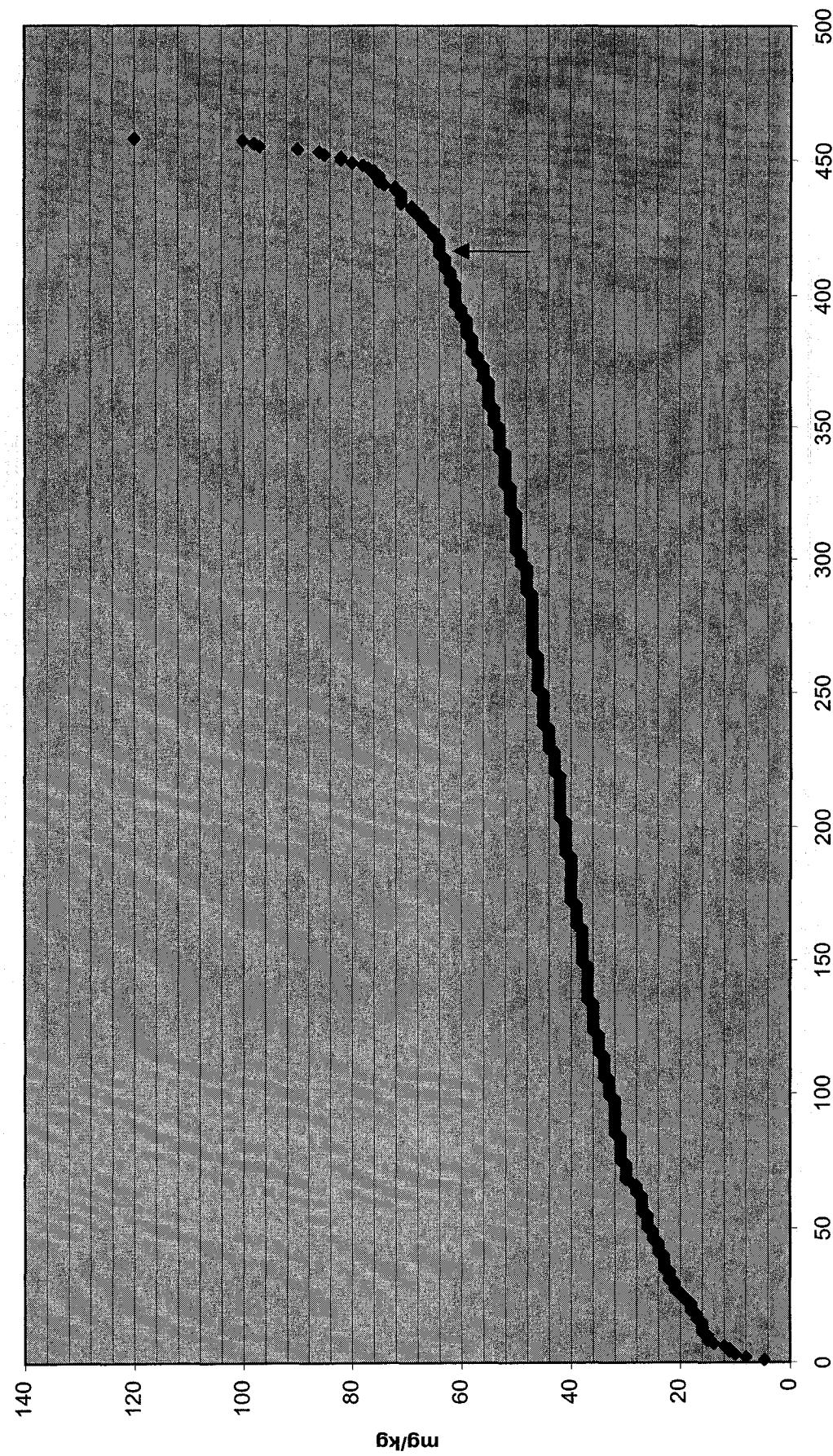
Vanadium - Preliminary Facility-Specific Metals Data Set



Vanadium - Preliminary Facility-Specific Metals Data Set - Log Transformed



Zinc - Preliminary Facility-Specific Metals Data Set
(Concentrations Plotted in Ascending Order)



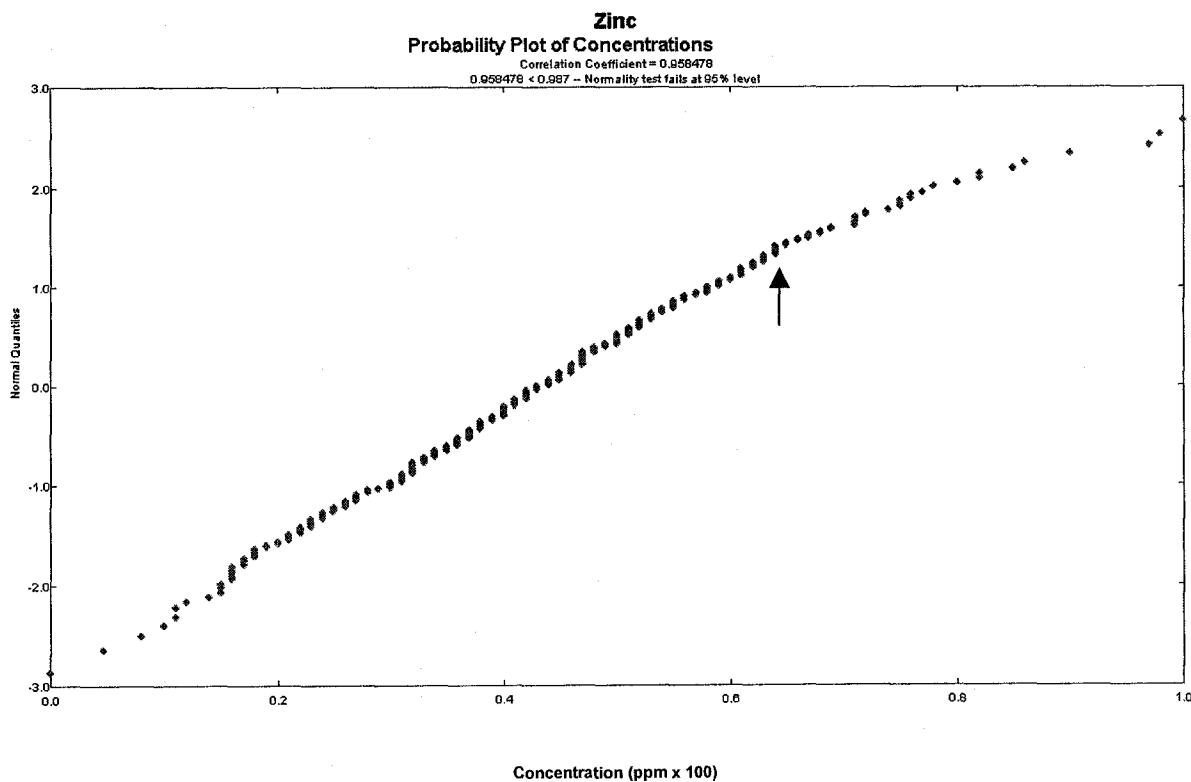
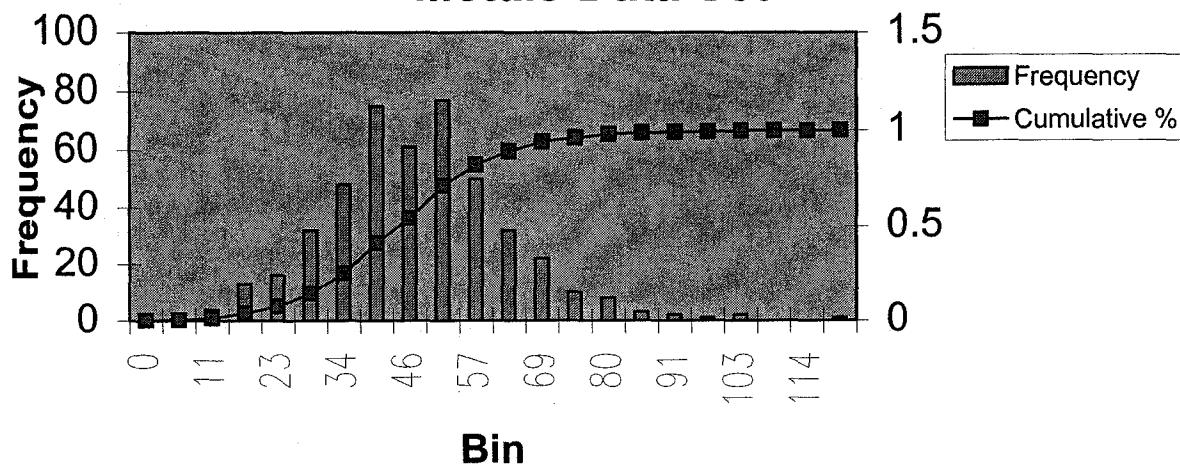
**Zinc - Preliminary Facility-Specific
Metals Data Set**

Mean	44.18681917
Standard Error	0.732113974
Median	44
Mode	47
Standard Deviation	15.68501863
Sample Variance	246.0198095
Kurtosis	1.578571
Skewness	0.533867322
Range	119.95
Minimum	0.05
Maximum	120
Sum	20281.75
Count	459
Largest(1)	120
Smallest(1)	0.05
Confidence Level(95.0%)	1.438720251

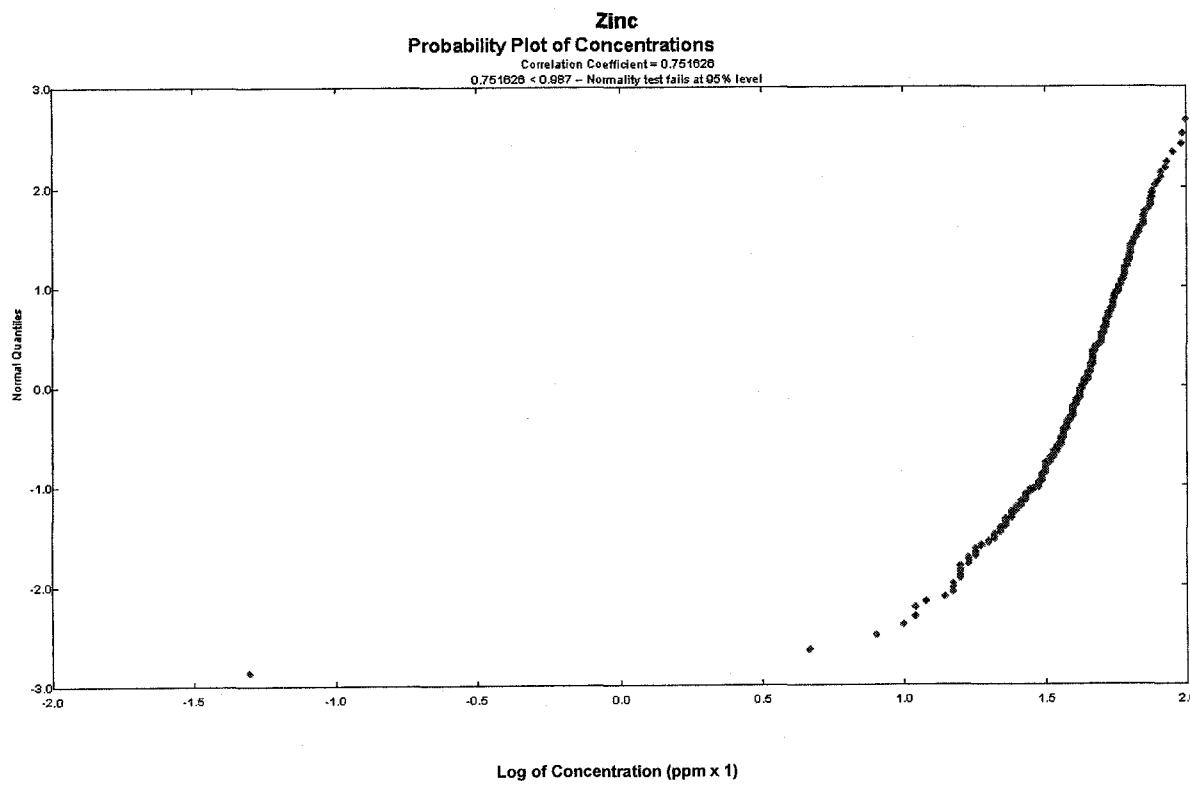
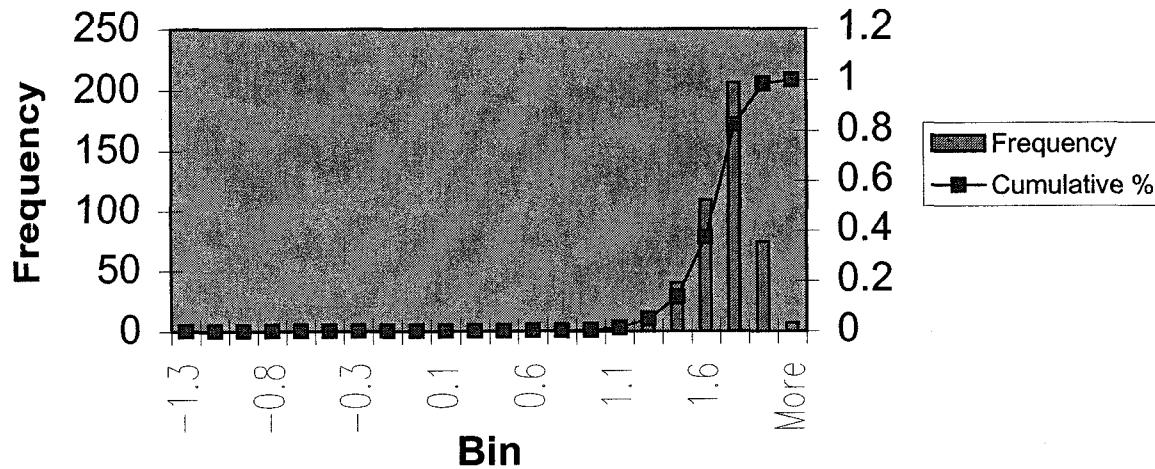
**Zinc - Preliminary Facility-Specific Metals Data Set
Log Transformed**

Mean	1.60961452
Standard Error	0.01026043
Median	1.643452676
Mode	1.672097858
Standard Deviation	0.219822374
Sample Variance	0.048321876
Kurtosis	67.19890868
Skewness	-5.583626785
Range	3.380211242
Minimum	-1.301029996
Maximum	2.079181246
Sum	738.8130645
Count	459
Largest(1)	2.079181246
Smallest(1)	-1.301029996
Confidence Level(95.0%)	0.020163374

Zinc - Preliminary Facility-Specific Metals Data Set



Zinc - Preliminary Facility-Specific Metals Data Set - Log Transformed



Appendix B

Appendix B

Statistical Evaluation for the Site-specific Expanded Metals Data Set

Statistical Summary of Site-specific Metals Data Set

Boeing Realty Corporation Former C-6 Facility

Analyte	Number Analyzed	Number Detected	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Location of Maximum Concentration	Min SQL	Max SQL	Mean Conc	Std. Deviation	Normal UCL	99% UCL	Calculated Statistic	Normal?	Lognormal 99% UCL	Calculated Statistic Log	Normal?
Aluminum	577	0	100.00%	3010	43300	Y-21	20	20	22398.93	23641.45	D'Agostino	0.05-p<0.10	Yes	22375.07	0.05-p<0.10	Yes	
Antimony	912	326	586	35.75%	0.2B	3.1B	0.5	6	1.93	1.06	D'Agostino	p>0.01	No	1.96	p>0.01	No	
Arsenic	944	721	223	76.38%	1.1	270	0.11	10	4.53	14.53	D'Agostino	p>0.01	No	3.75	p>0.01	No	
Barium	912	0	100.00%	12	875	C-2-242	0.1	20	135.03	51.30	D'Agostino	p>0.01	No	131.70	p>0.01	No	
Beryllium	912	668	244	73.25%	0.11	C-2-169MM	0.06	0.5	0.50	0.29	D'Agostino	p>0.01	No	0.57	p>0.01	No	
Cadmium	909	336	573	36.96%	0.087	52.9	0.05	0.5	0.37	1.85	D'Agostino	p>0.01	No	0.30	p>0.01	No	
Chromium	911	0	100.00%	4.8	664	C-1-31	0.05	1	27.12	28.87	D'Agostino	p>0.01	No	25.62	p>0.01	No	
Cobalt	911	0	100.00%	1.1	124	C-2-71	0.5	5	10.39	5.75	D'Agostino	p>0.01	No	10.05	p>0.01	No	
Copper	911	0	100.00%	2.1	269	C-2-12	0.1	2.5	20.66	12.43	D'Agostino	p>0.01	No	19.29	p>0.01	No	
Lead	929	720	209	77.50%	1.5	1790	0.3	1	9.05	68.70	D'Agostino	p>0.01	No	6.34	p>0.01	No	
Mercury	911	29	474	3.18%	0.02B	0.48	1-31	0.01	0.2	0.04	0.03	D'Agostino	p>0.01	No	0.04	p>0.01	No
Molybdenum	912	12	403	1.32%	0.3B	5.9	C-2-245	0.5	4	0.97	0.72	D'Agostino	p>0.01	No	0.93	p>0.01	No
Nickel	912	910	3	99.78%	4.1	37.4	C-2-242	0.5	5	16.38	5.48	D'Agostino	p>0.01	No	16.19	p>0.01	No
Selenium	909	52	843	5.72%	0.4B	14	C-1-39	0.5	5	0.64	0.89	D'Agostino	p>0.01	No	0.54	p>0.01	No
Silver	907	7	898	0.77%	0.27B	1.6	C-1-53	0.1	5	0.38	0.24	D'Agostino	p>0.01	No	0.40	p>0.01	No
Thallium	911	191	536	20.97%	0.5	C-2-208	2.4	0.5	200	2.97	D'Agostino	p>0.01	No	1.72	p>0.01	No	
Vanadium	911	908	3	99.67%	11	93	1-31-1	0.5	5	46.46	15.01	D'Agostino	0.05-p<0.10	Yes	46.48	0.05-p<0.10	Yes
Zinc	903	902	1	99.89%	3.9	1460	C-2-242	0.1	10	56.77	50.59	D'Agostino	p>0.01	No	54.81	p>0.01	No

Notes:

(1) Detected values include estimated values which may be below the detection limits
 Minimum, maximum values based on actual values not the DL/2 adjusted values

(3) Statistics not calculated where number of detects < 3

(4) Statistics on this table are based on non-detect values set equal to detection limit/2
 D'Agostino's test for normality is used when the data set has more than 50 points
 Shapiro - Wilkes test for normality used when the data set has less than 50 points

(6) SQL is sample Quantitation Limit

(7) Method detection limits are not tabulated in this version of the program

(8) B qualifier is an estimated value for inorganic analytes

(9) UCL calculations use a single tailed statistic

(10) Normal UCL is calculated using Student-T statistic

Log-Normal UCL is calculated using the Land H statistic
 UCL calculations for non-normally distributed data should be viewed with considerable skepticism
 (11)

**Aluminum - Site-Specific Expanded
Metals Data Set**

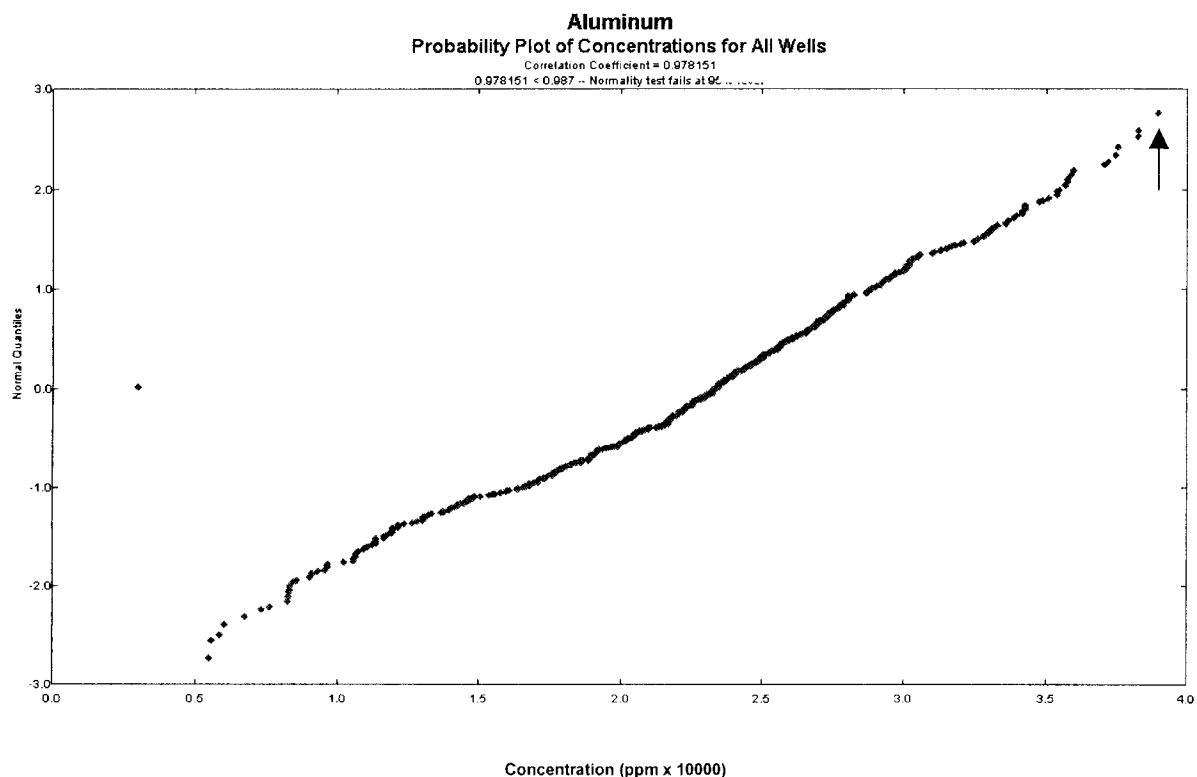
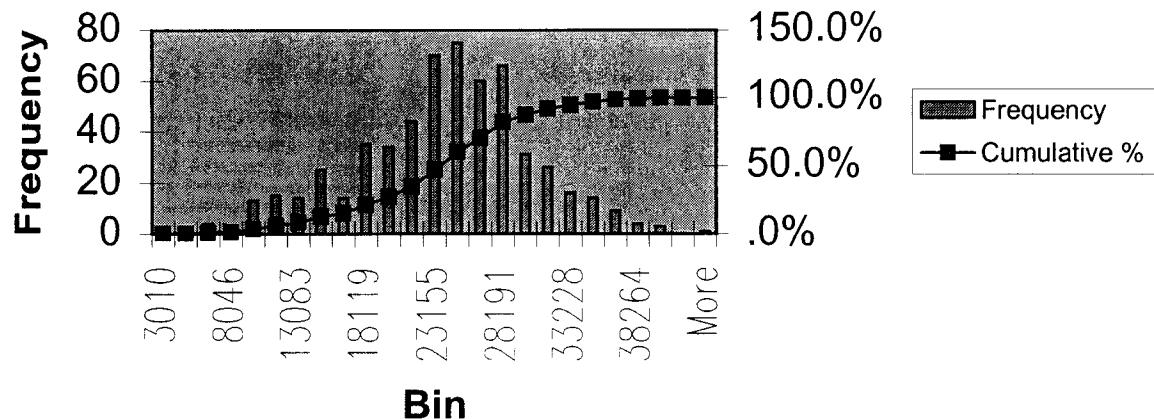
Mean	22938.92548
Standard Error	271.8346869
Median	23500
Mode	22600
Standard Deviation	6529.693253
Sample Variance	42636893.98
Kurtosis	0.105509744
Skewness	-0.269425554
Range	40290
Minimum	3010
Maximum	43300
Sum	13235760
Count	577
Largest(1)	43300
Smallest(1)	3010
Confidence Level(95.0%)	533.9078414

**Aluminum - Site-Specific Expanded
Metals Data Set**

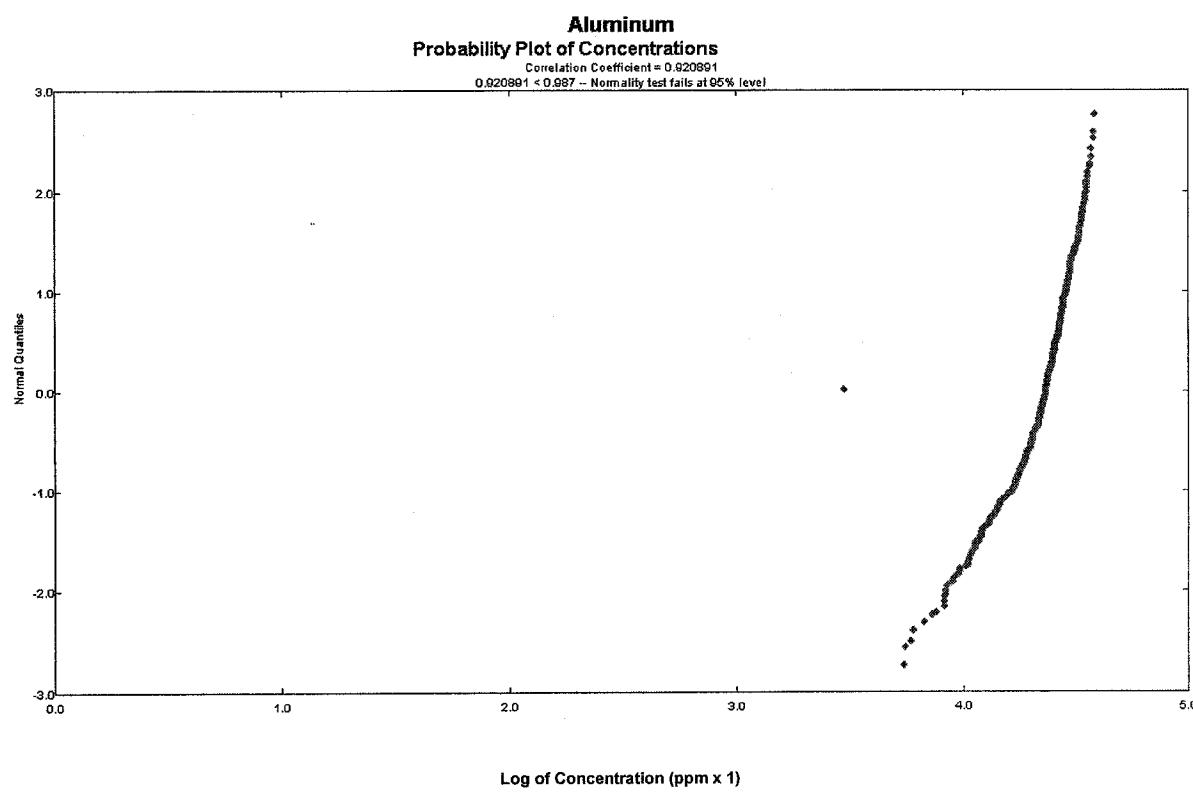
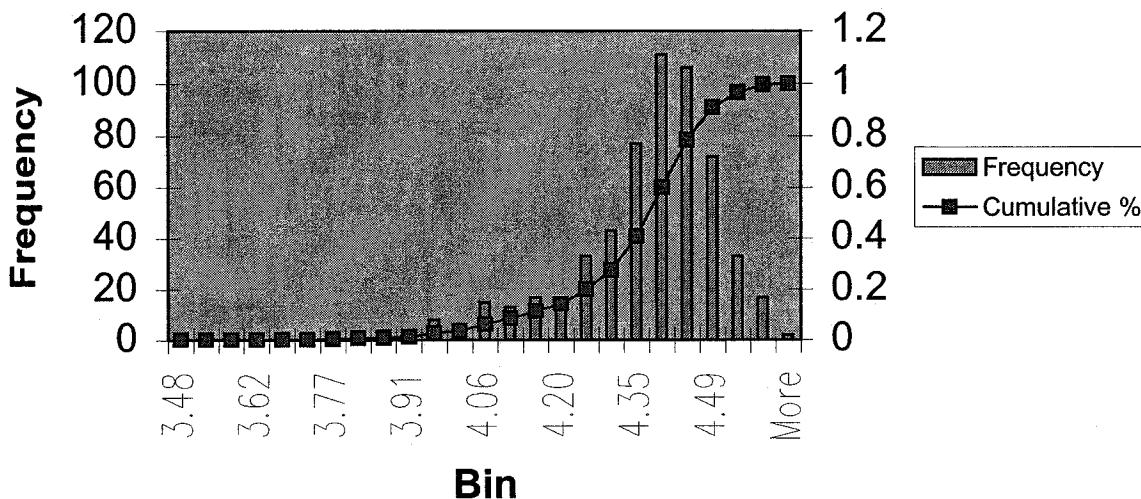
Log Transformed

Mean	4.338607189
Standard Error	0.006208874
Median	4.371067862
Mode	4.354108439
Standard Deviation	0.14914228
Sample Variance	0.02224342
Kurtosis	3.411289448
Skewness	-1.481346626
Range	1.157921401
Minimum	3.478566496
Maximum	4.636487896
Sum	2503.376348
Count	577
Largest(1)	4.636487896
Smallest(1)	3.478566496
Confidence Level(95.0%)	0.012194789

Aluminum - Site-Specific Expanded Metals Data Set



Aluminum - Site-Specific Expanded Metals Data Set - Log Transformed



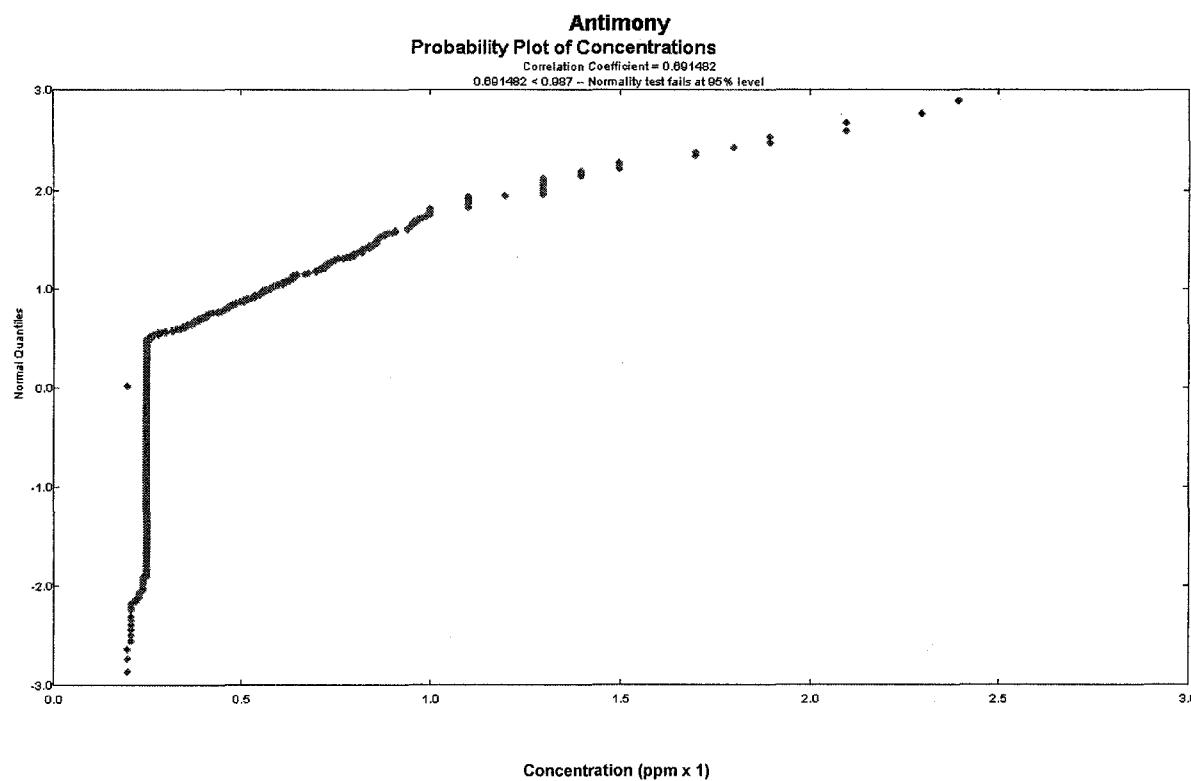
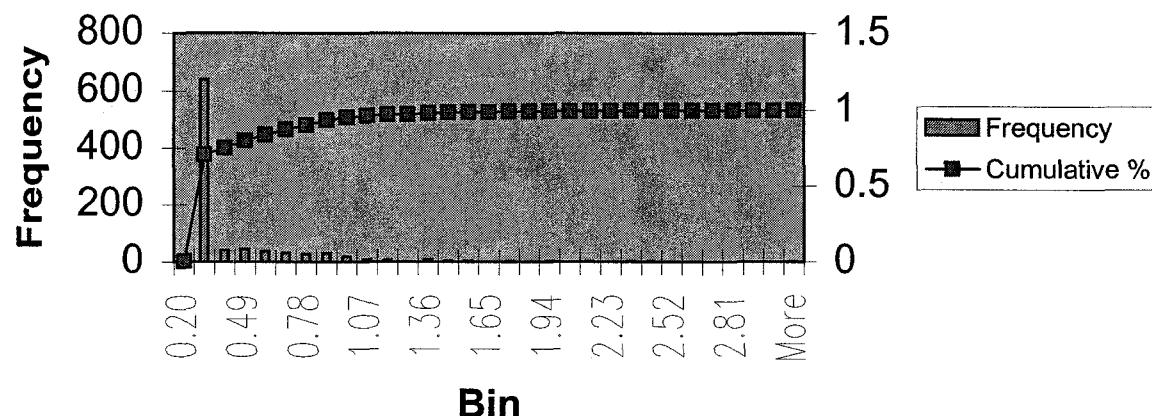
**Antimony - Site-Specific Expanded
Metals Data Set**

Mean	0.387072368
Standard Error	0.009905642
Median	0.25
Mode	0.25
Standard Deviation	0.299143826
Sample Variance	0.089487029
Kurtosis	16.57447691
Skewness	3.428827833
Range	2.9
Minimum	0.2
Maximum	3.1
Sum	353.01
Count	912
Largest(1)	3.1
Smallest(1)	0.2
Confidence Level(95.0%)	0.019440529

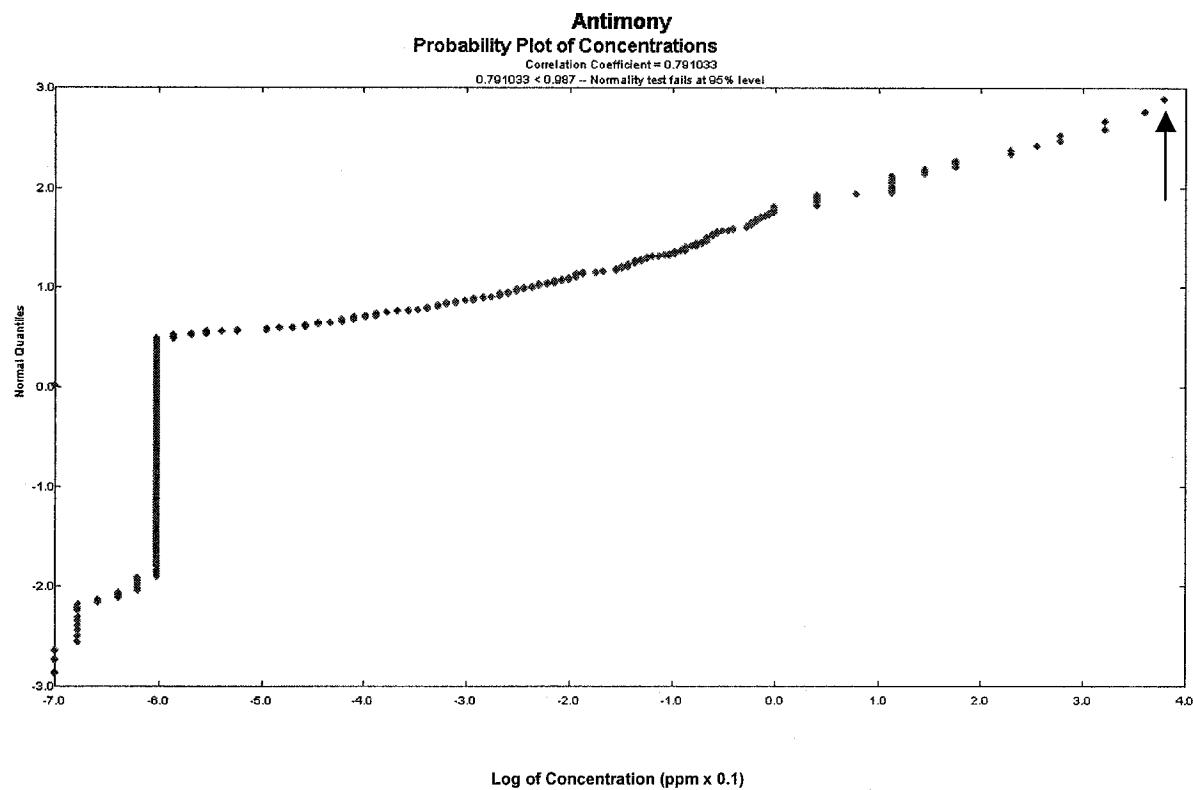
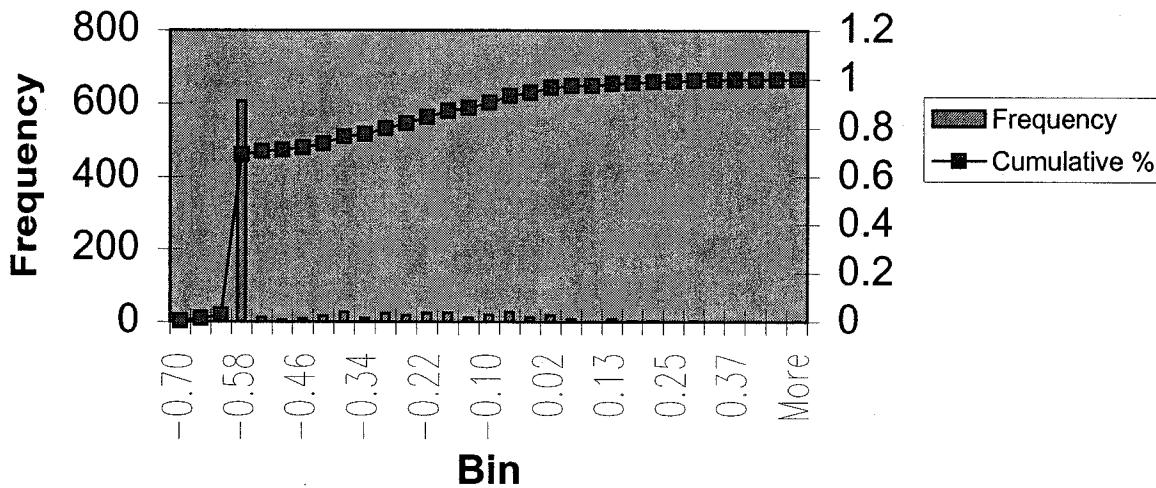
**Antimony - Site-Specific Expanded
Metals Data Set
Log Transformed**

Mean	-0.482090607
Standard Error	0.007131213
Median	-0.602059991
Mode	-0.602059991
Standard Deviation	0.215357897
Sample Variance	0.046379024
Kurtosis	2.009168087
Skewness	1.689858098
Range	1.190331698
Minimum	-0.698970004
Maximum	0.491361694
Sum	-439.6666337
Count	912
Largest(1)	0.491361694
Smallest(1)	-0.698970004
Confidence Level(95.0%)	0.013995513

Antimony - Site-Specific Expanded Metals Data Set



Antimony - Site-Specific Expanded Metals Data Set - Log Transformed



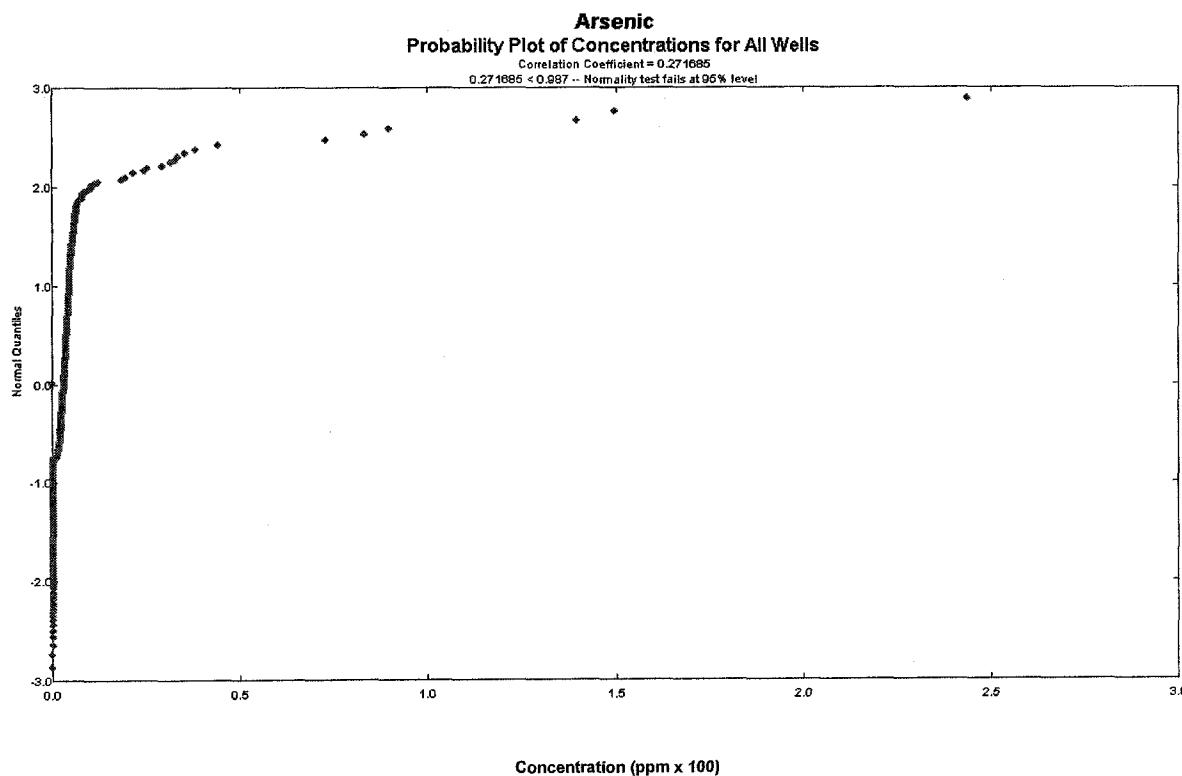
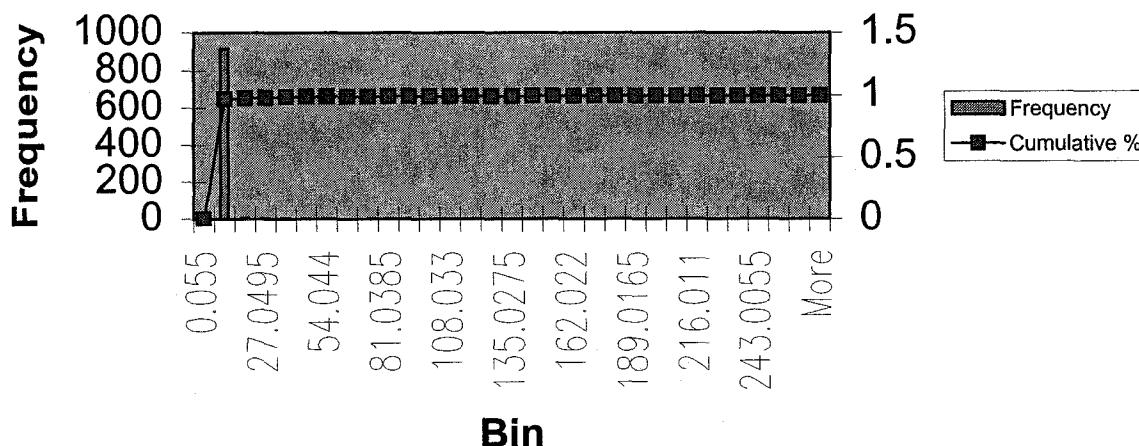
**Arsenic - Site-Specific Expanded
Metals Data Set**

Mean	4.530259534
Standard Error	0.472850109
Median	3.3
Mode	0.5
Standard Deviation	14.52812242
Sample Variance	211.0663412
Kurtosis	216.468246
Skewness	13.7506776
Range	269.945
Minimum	0.055
Maximum	270
Sum	4276.565
Count	944
Largest(1)	270
Smallest(1)	0.055
Confidence Level(95.0%)	0.927959063

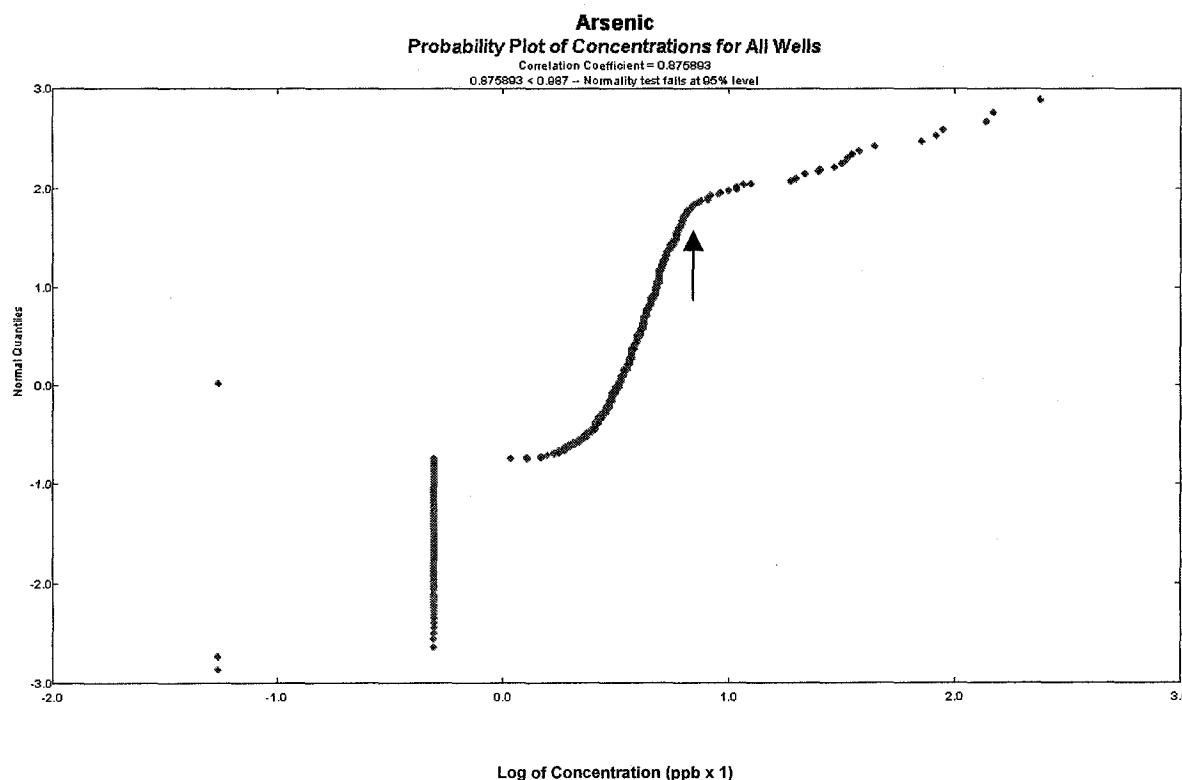
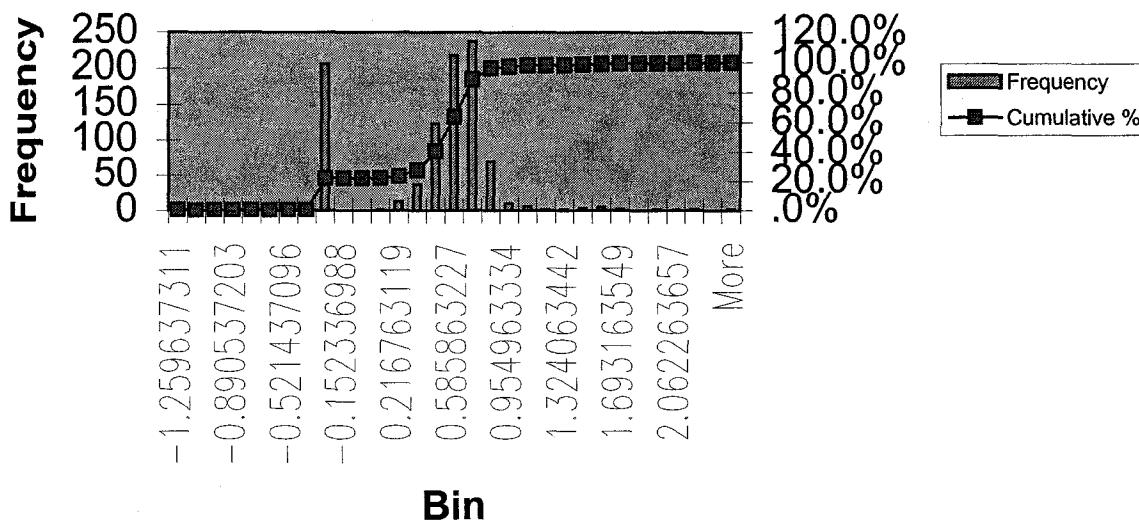
**Arsenic - Site-Specific Expanded
Metals Data Set
Log Transformed**

Mean	0.390364093
Standard Error	0.014171697
Median	0.51851394
Mode	-0.301029996
Standard Deviation	0.435419487
Sample Variance	0.18959013
Kurtosis	1.733126174
Skewness	-0.215959857
Range	3.691001075
Minimum	-1.259637311
Maximum	2.431363764
Sum	368.5037042
Count	944
Largest(1)	2.431363764
Smallest(1)	-1.259637311
Confidence Level(95.0%)	0.027811678

Arsenic - Site-Specific Expanded Metals Data Set



Arsenic - Site-Specific Expanded Metals Data Set - Log Transformed



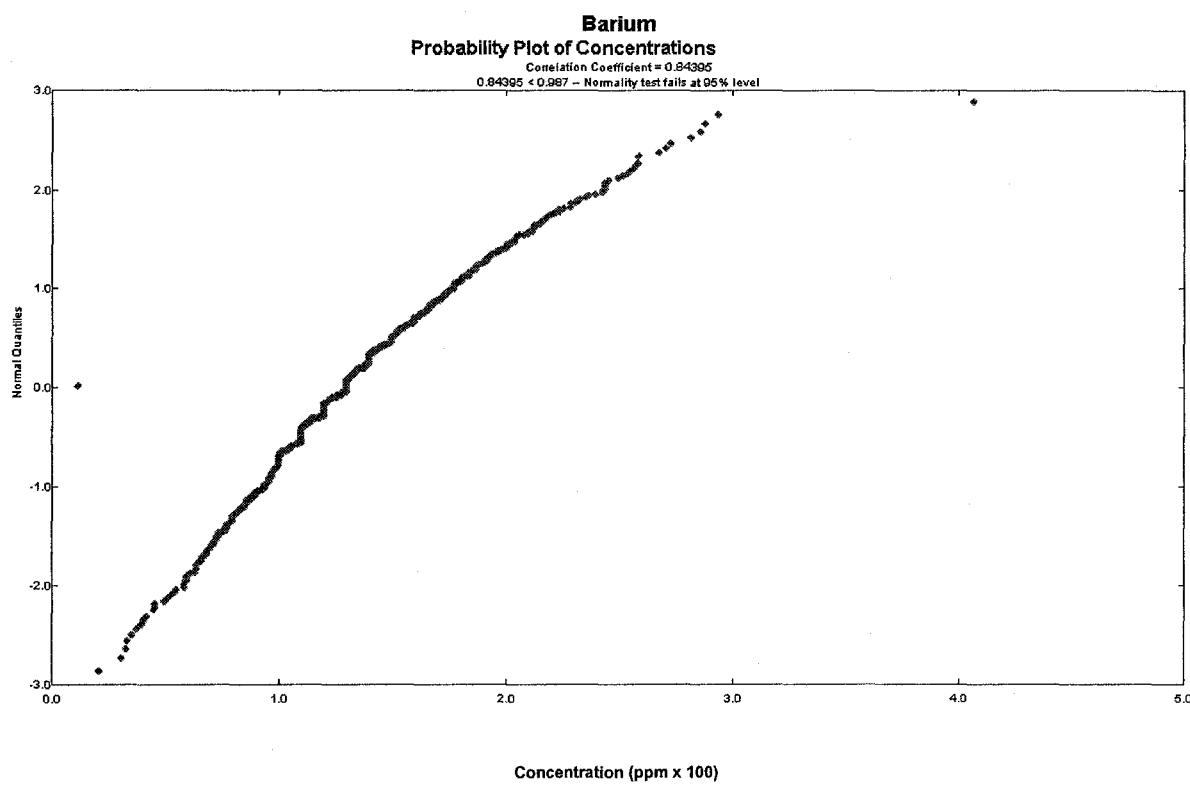
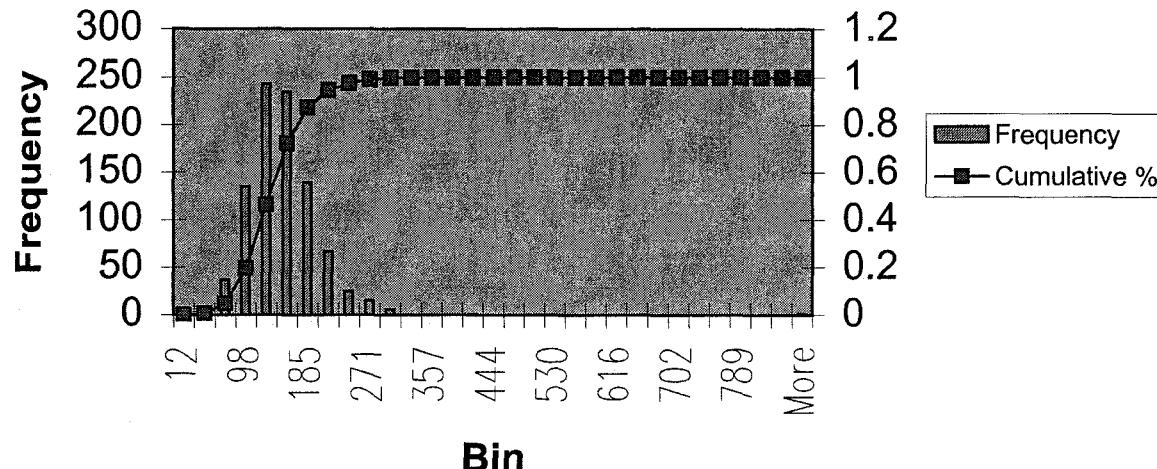
**Barium - Site-Specific Expanded
Metals Data Set**

Mean	135.0346491
Standard Error	1.698550517
Median	130
Mode	110
Standard Deviation	51.29510074
Sample Variance	2631.18736
Kurtosis	47.6423835
Skewness	3.78063945
Range	863
Minimum	12
Maximum	875
Sum	123151.6
Count	912
Largest(1)	875
Smallest(1)	12
Confidence Level(95.0%)	3.333526551

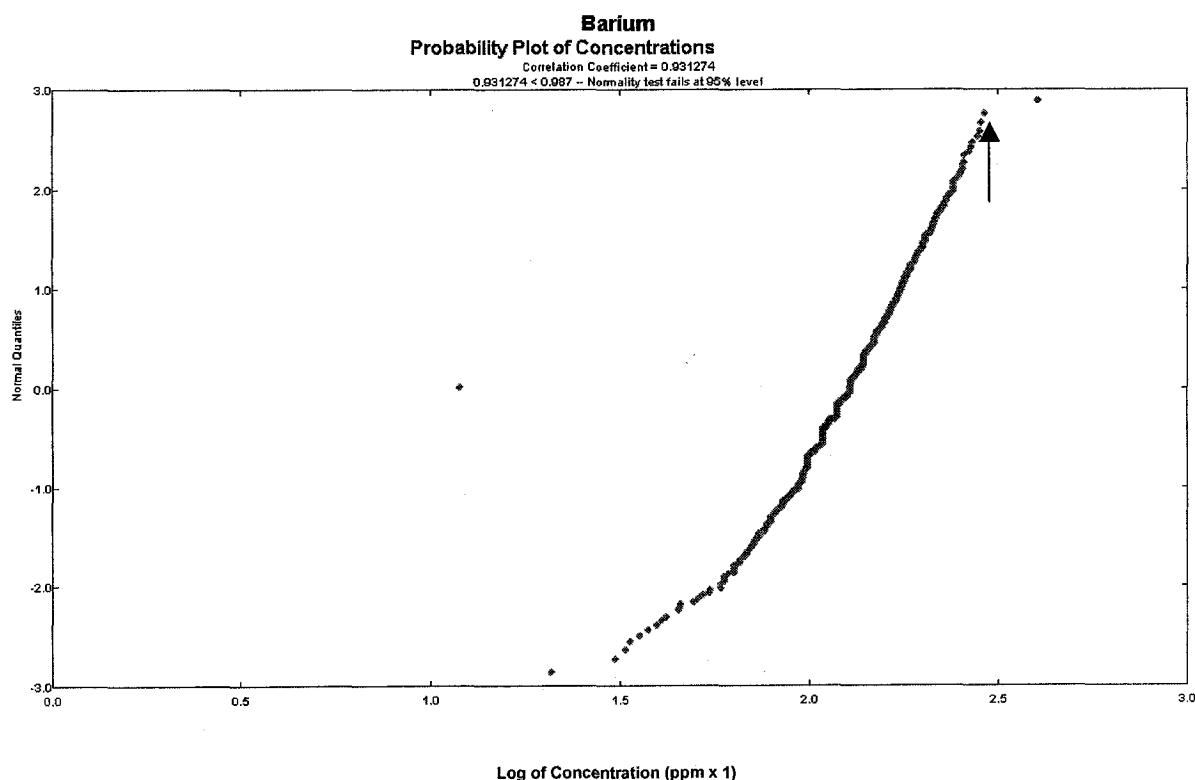
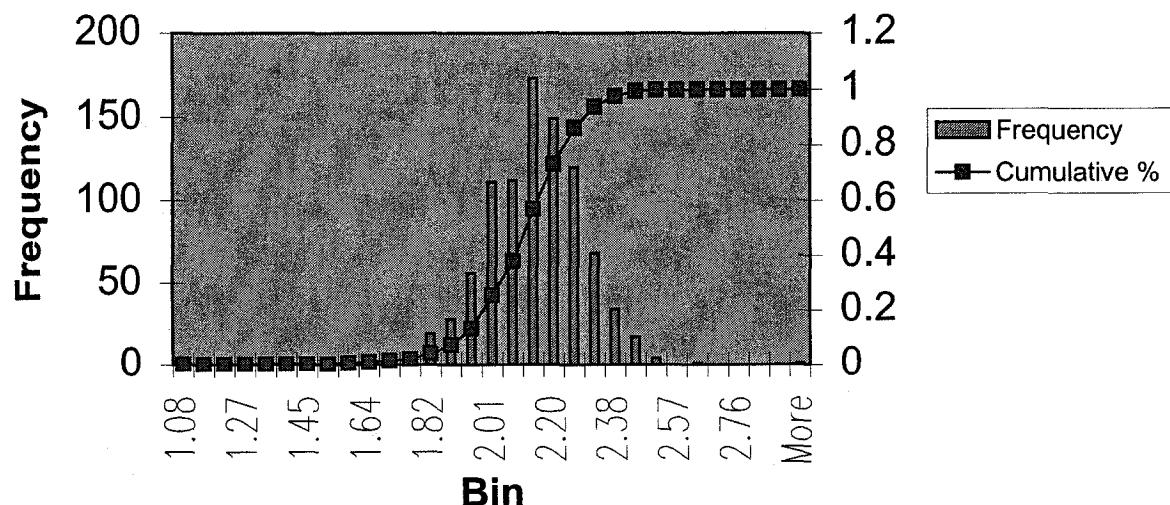
**Barium - Site-Specific Expanded
Metals Data Set
Log Transformed**

Mean	2.103049372
Standard Error	0.005230138
Median	2.113943352
Mode	2.041392685
Standard Deviation	0.157946694
Sample Variance	0.024947158
Kurtosis	3.723289087
Skewness	-0.673068729
Range	1.862826807
Minimum	1.079181246
Maximum	2.942008053
Sum	1917.981027
Count	912
Largest(1)	2.942008053
Smallest(1)	1.079181246
Confidence Level(95.0%)	0.010264518

Barium - Site-Specific Expanded Metals Data Set



Barium - Site-Specific Expanded Metals Data Set - Log Transformed



**Beryllium - Site-Specific Expanded
Metals Data Set**

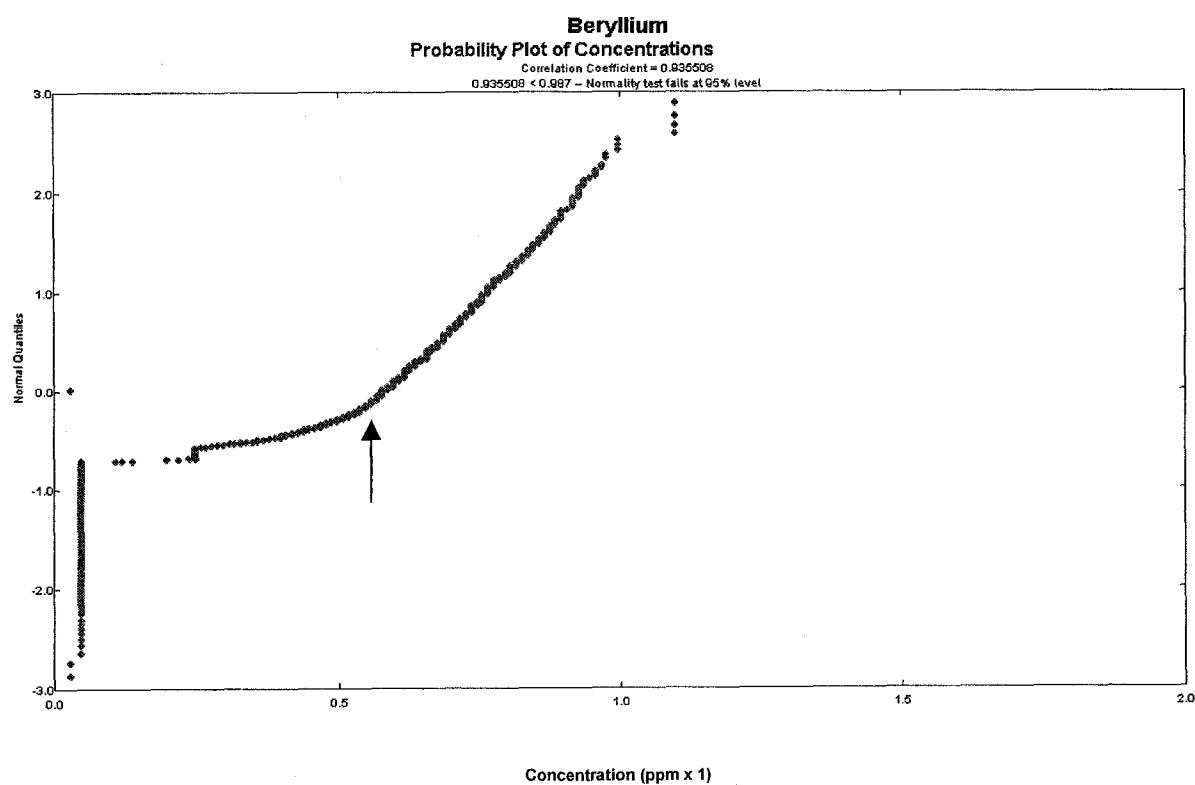
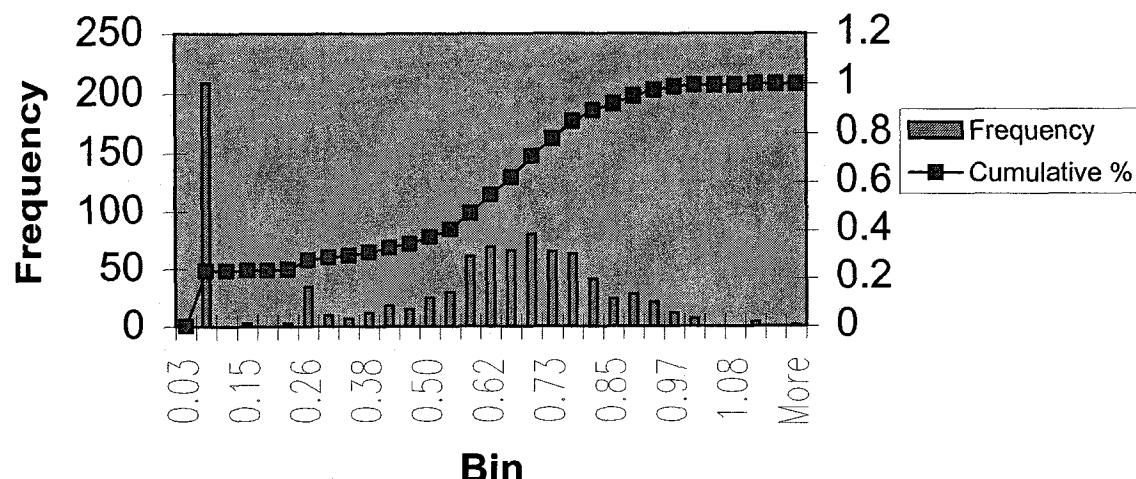
Mean	0.499046053
Standard Error	0.009677645
Median	0.59
Mode	0.05
Standard Deviation	0.292258457
Sample Variance	0.085415006
Kurtosis	-1.083445257
Skewness	-0.441679774
Range	1.17
Minimum	0.03
Maximum	1.2
Sum	455.13
Count	912
Largest(1)	1.2
Smallest(1)	0.03
Confidence Level(95.0%)	0.018993068

**Beryllium - Site-Specific Expanded
Metals Data Set**

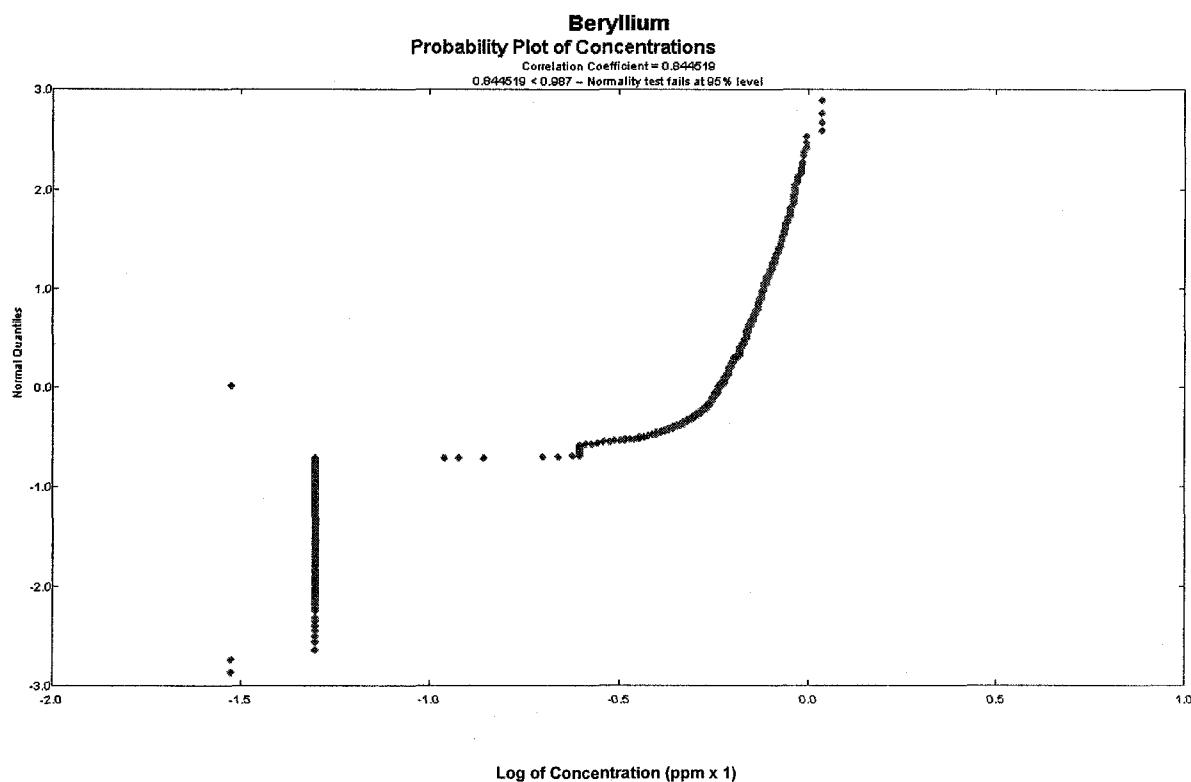
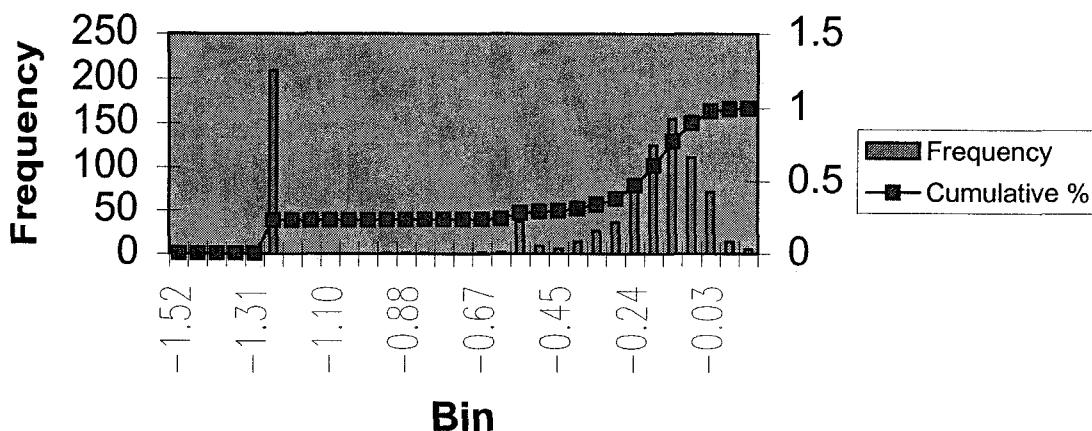
Log Transformed

Mean	-0.471087634
Standard Error	0.015793096
Median	-0.229147988
Mode	-1.301029996
Standard Deviation	0.476941047
Sample Variance	0.227472762
Kurtosis	-0.659666623
Skewness	-1.049183204
Range	1.602059991
Minimum	-1.522878745
Maximum	0.079181246
Sum	-429.6319225
Count	912
Largest(1)	0.079181246
Smallest(1)	-1.522878745
Confidence Level(95.0%)	0.030995078

Beryllium - Site-Specific Expanded Metals Data Set



Beryllium - Site-Specific Expanded Metals Data Set - Log Transformed



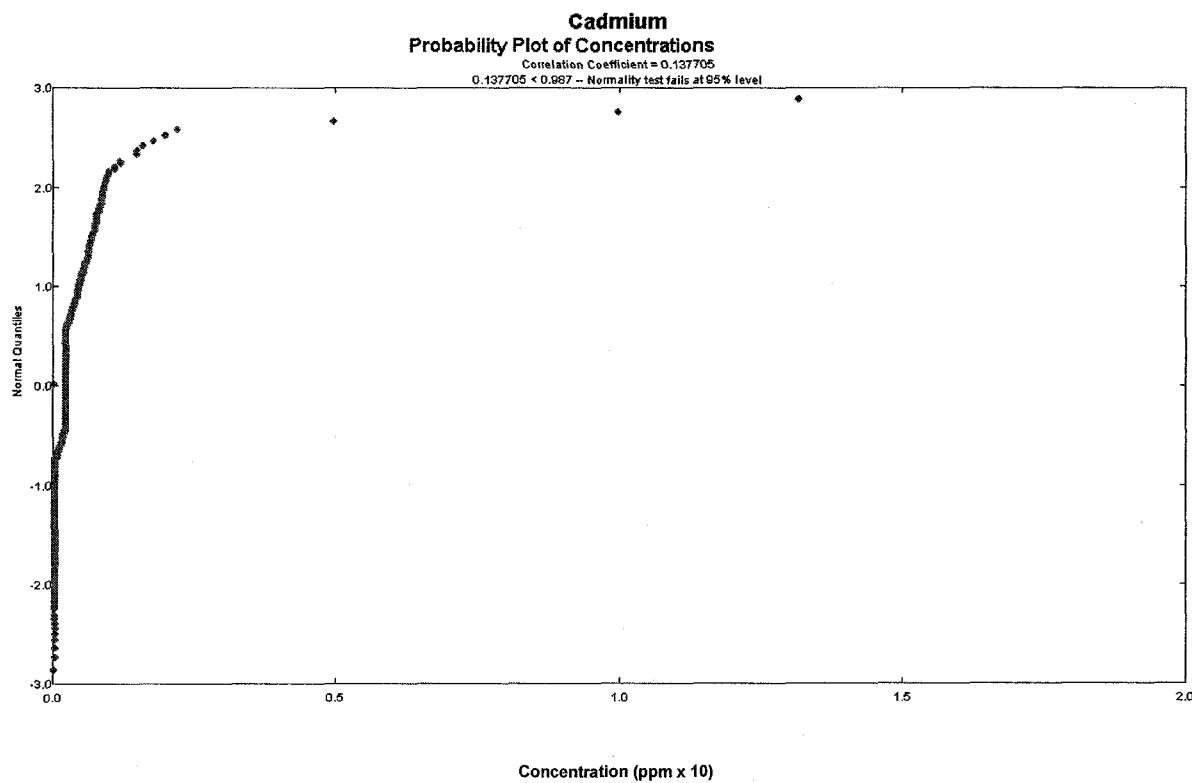
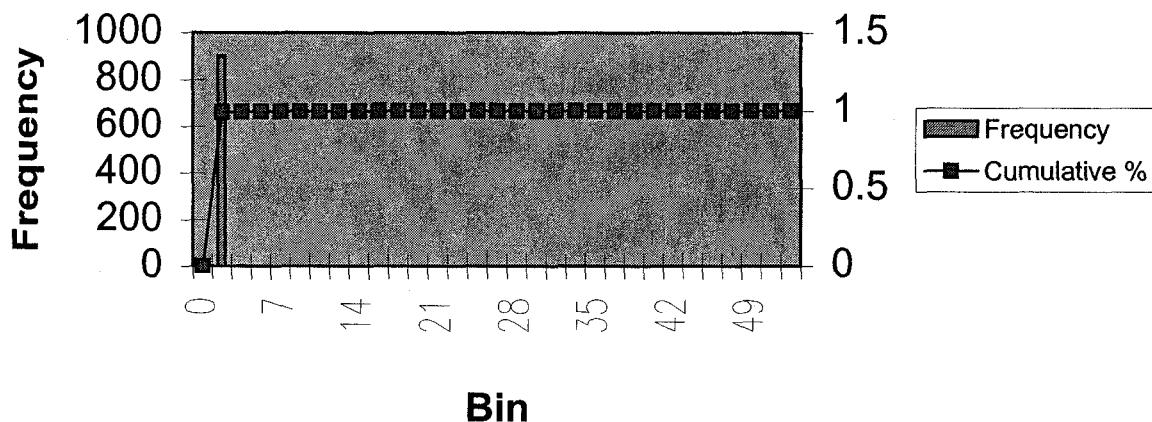
**Cadmium - Site-Specific
Expanded Metals Data Set**

Mean	0.374188119
Standard Error	0.06127096
Median	0.25
Mode	0.25
Standard Deviation	1.847296571
Sample Variance	3.41250462
Kurtosis	725.0808455
Skewness	25.91931642
Range	52.875
Minimum	0.025
Maximum	52.9
Sum	340.137
Count	909
Largest(1)	52.9
Smallest(1)	0.025
Confidence Level(95.0%)	0.120249186

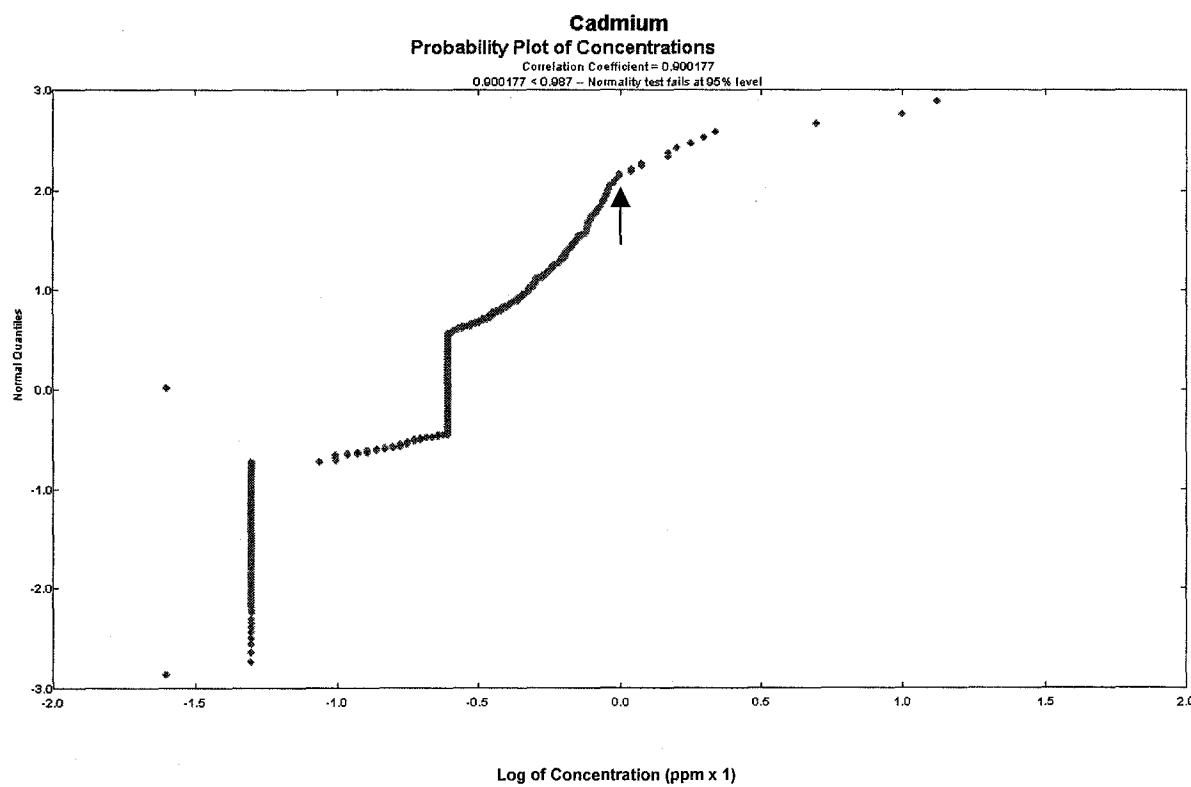
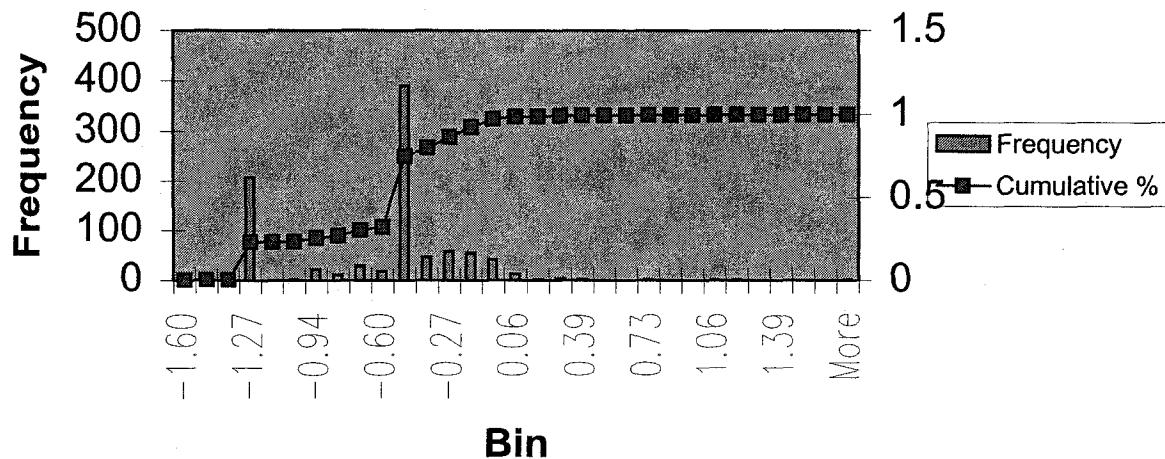
**Cadmium - Site-Specific Expanded
Metals Data Set
Log Transformed**

Mean	-0.686319383
Standard Error	0.01346667
Median	-0.602059991
Mode	-0.602059991
Standard Deviation	0.406015078
Sample Variance	0.164848244
Kurtosis	1.245881865
Skewness	0.072899914
Range	3.325515663
Minimum	-1.602059991
Maximum	1.723455672
Sum	-623.8643189
Count	909
Largest(1)	1.723455672
Smallest(1)	-1.602059991
Confidence Level(95.0%)	0.026429423

Cadmium - Site-Specific Expanded Metals Data Set



Cadmium - Site-Specific Expanded Metals Data Set - Log Transformed



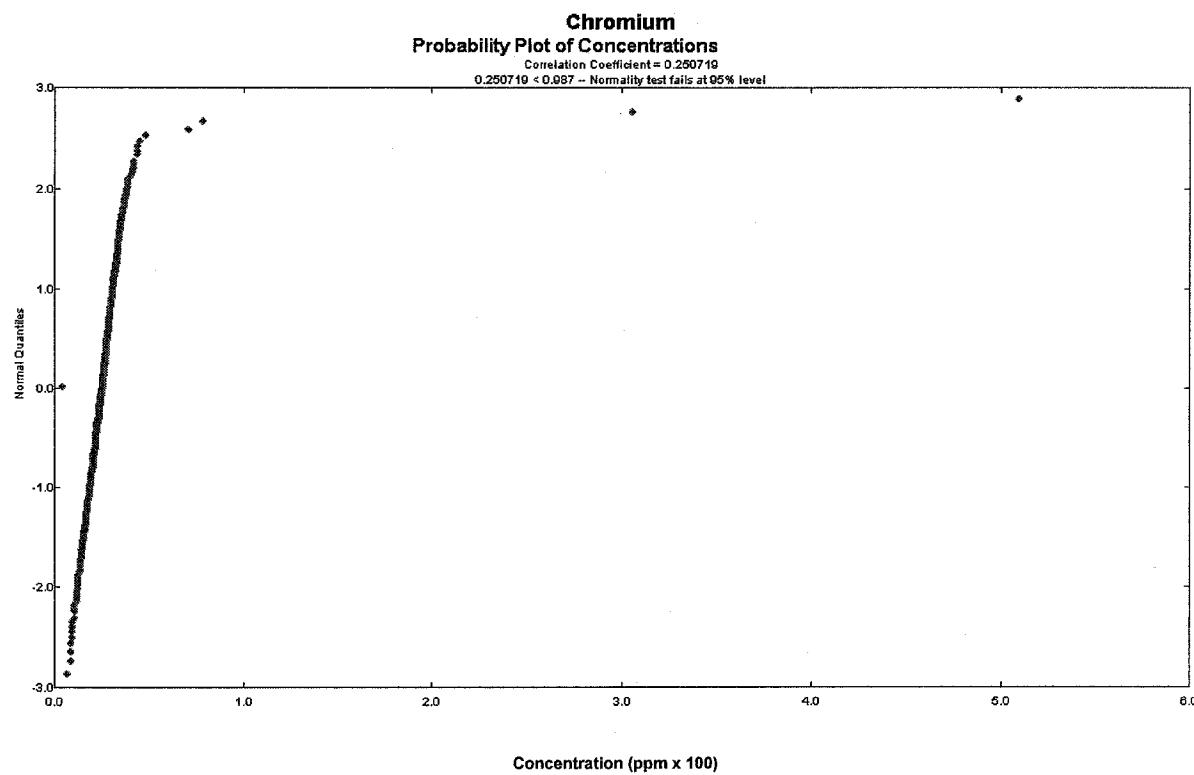
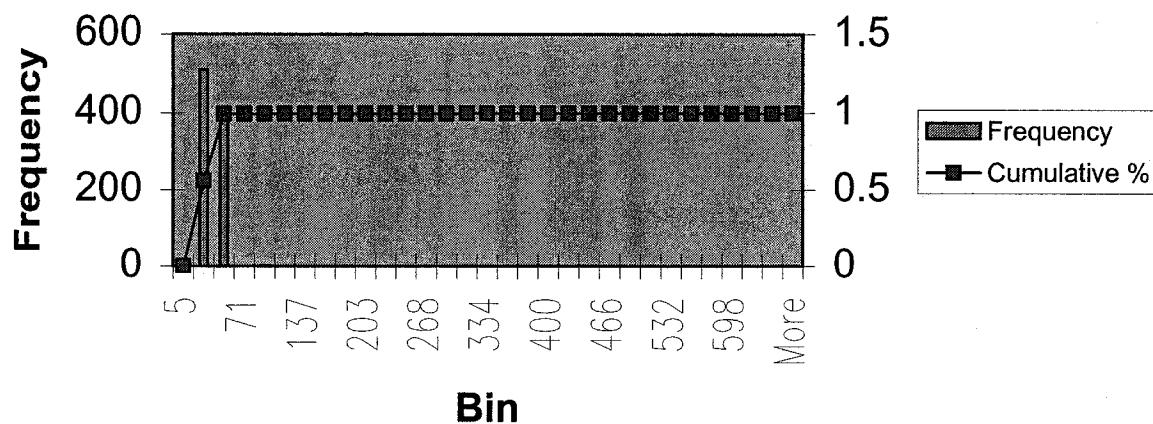
**Chromium - Site-Specific
Expanded Metals Data Set**

Mean	27.11811196
Standard Error	0.956661792
Median	25.8
Mode	22
Standard Deviation	28.8747091
Sample Variance	833.7488254
Kurtosis	354.9713061
Skewness	17.96319605
Range	659.2
Minimum	4.8
Maximum	664
Sum	24704.6
Count	911
Largest(1)	664
Smallest(1)	4.8
Confidence Level(95.0%)	1.877521358

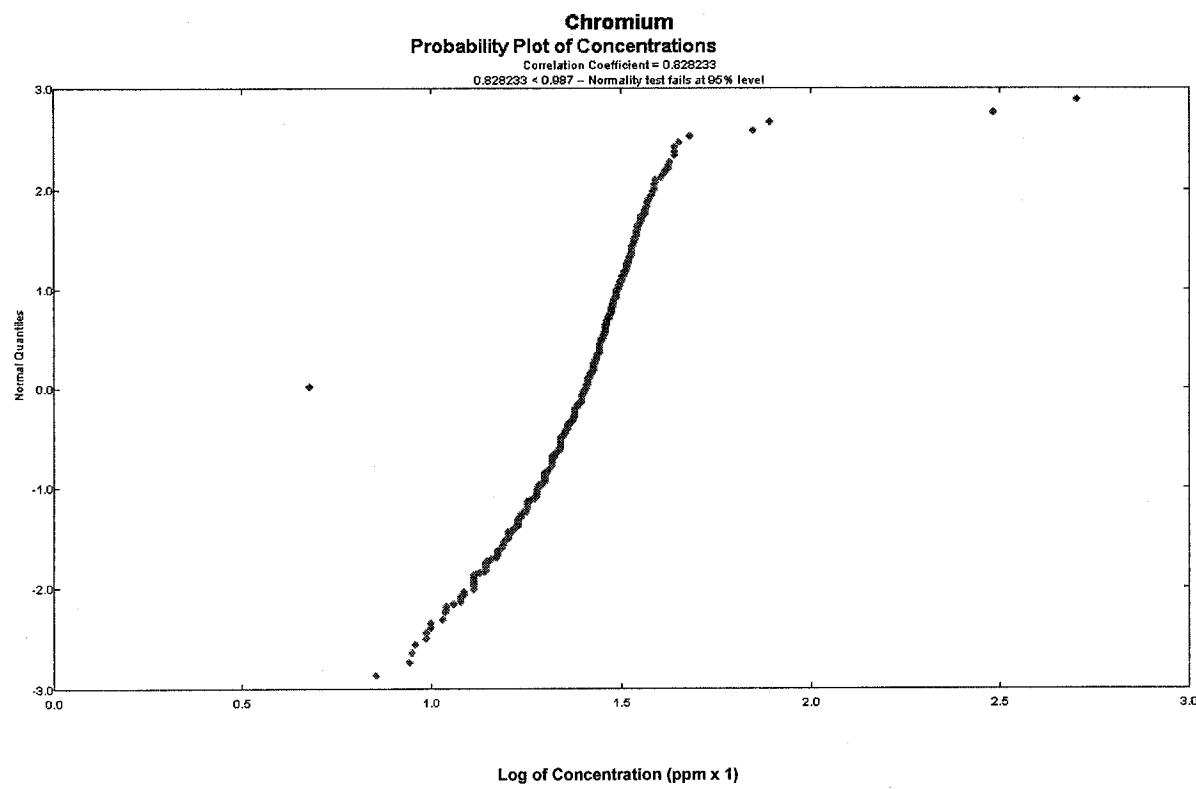
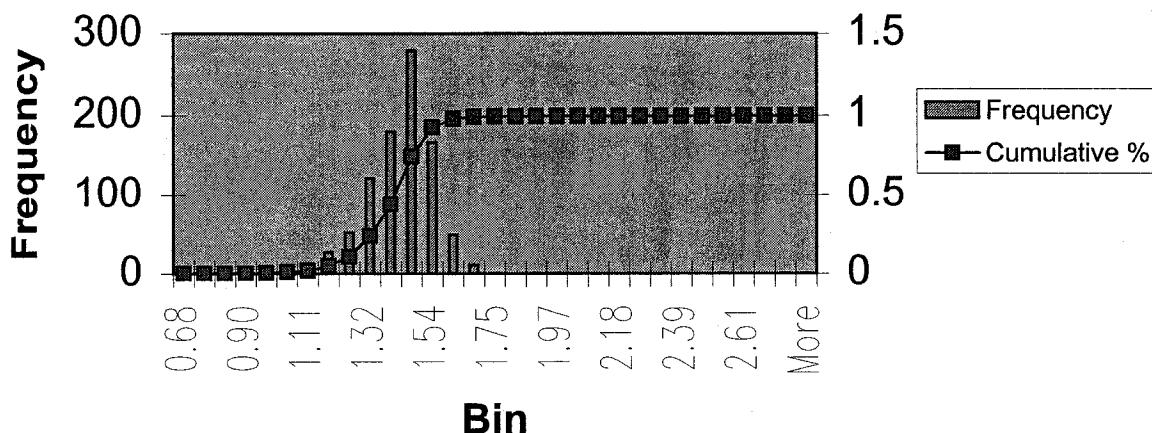
**Chromium - Site-Specific
Expanded Metals Data Set
Log Transformed**

Mean	1.396758551
Standard Error	0.004641838
Median	1.411619706
Mode	1.342422681
Standard Deviation	0.140103563
Sample Variance	0.019629008
Kurtosis	24.50208865
Skewness	1.971091482
Range	2.140926842
Minimum	0.681241237
Maximum	2.822168079
Sum	1272.44704
Count	911
Largest(1)	2.822168079
Smallest(1)	0.681241237
Confidence Level(95.0%)	0.00910996

Chromium - Site-Specific Expanded Metals Data Set



Chromium - Site-Specific Expanded Metals Data Set - Log Transformed



**Cobalt - Site-Specific Expanded
Metals Data Set**

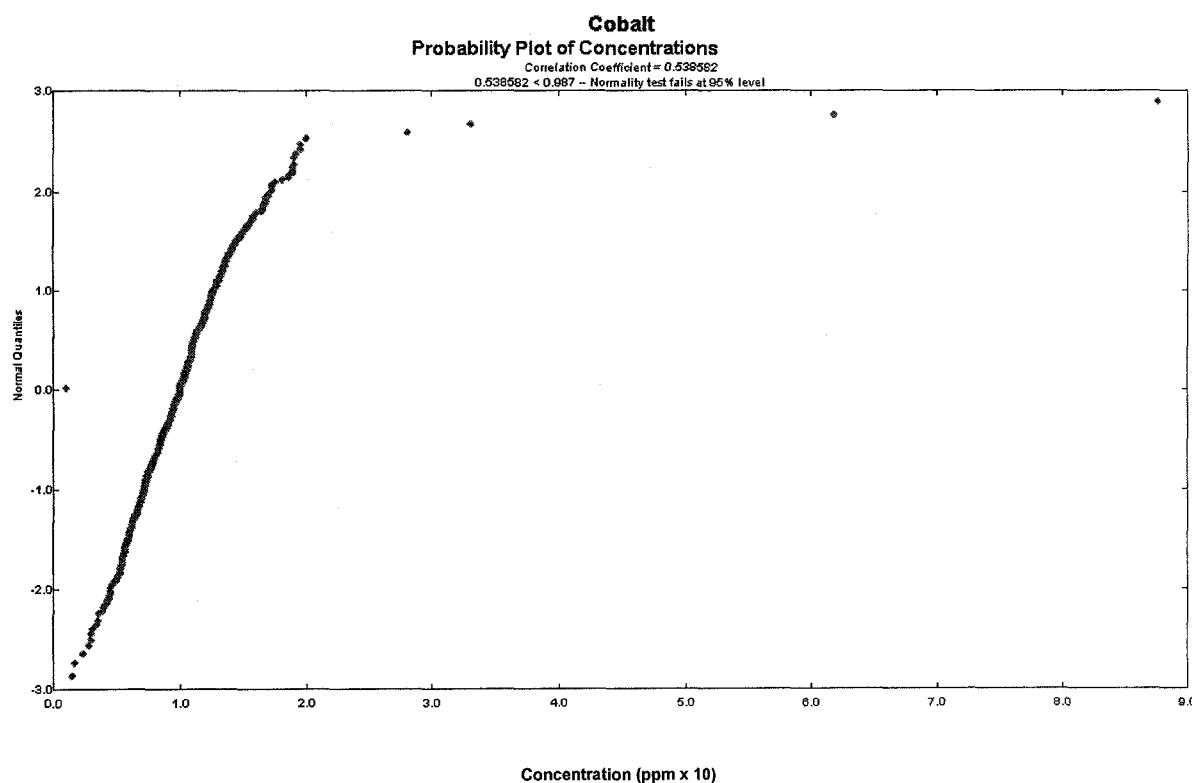
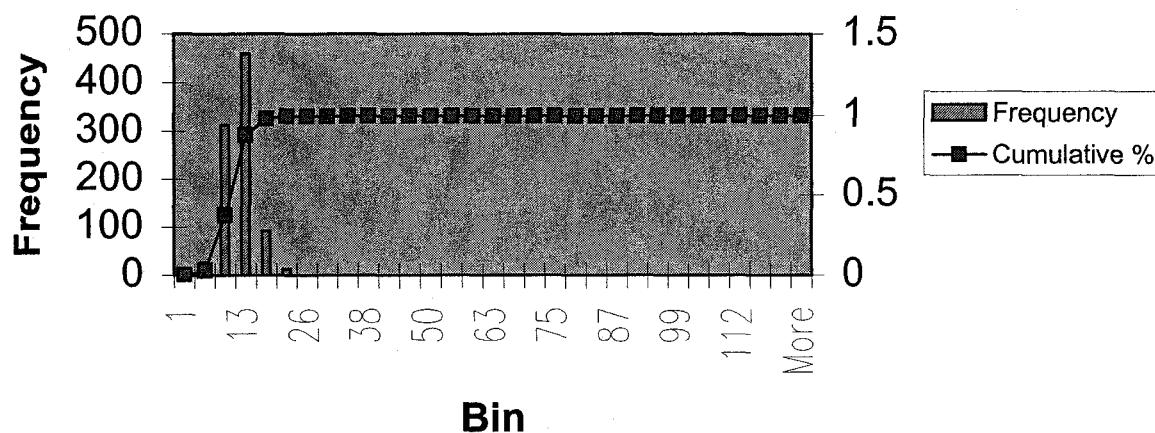
Mean	10.39374314
Standard Error	0.190591838
Median	10
Mode	11
Standard Deviation	5.752590848
Sample Variance	33.09230147
Kurtosis	209.0888059
Skewness	12.05178909
Range	122.9
Minimum	1.1
Maximum	124
Sum	9468.7
Count	911
Largest(1)	124
Smallest(1)	1.1
Confidence Level(95.0%)	0.374050943

**Cobalt - Site-Specific Expanded
Metals Data Set**

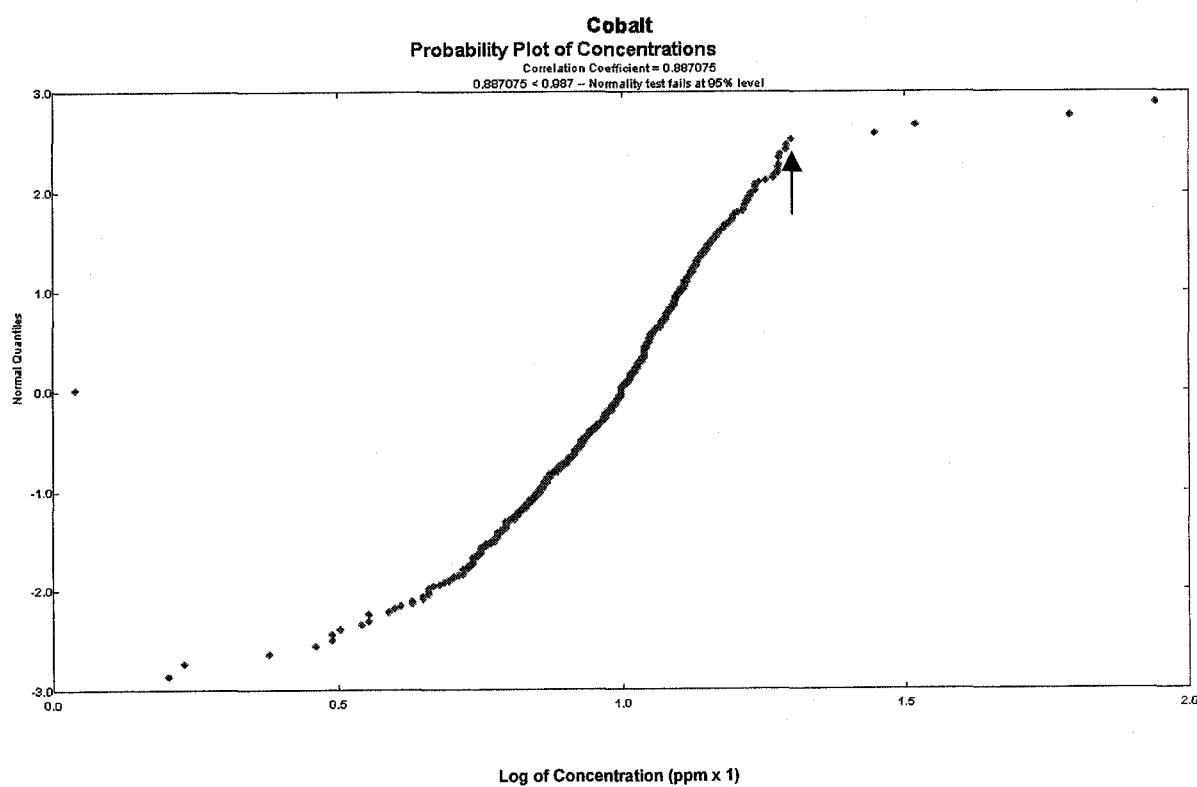
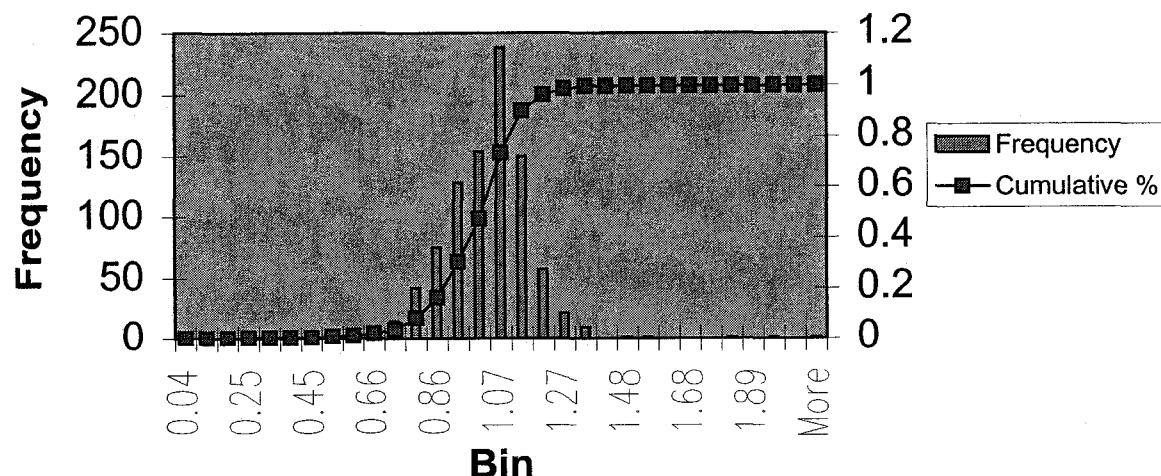
Log Transformed

Mean	0.987669484
Standard Error	0.005017638
Median	1
Mode	1.041392685
Standard Deviation	0.151446254
Sample Variance	0.022935968
Kurtosis	8.582181106
Skewness	-0.064203131
Range	2.052029
Minimum	0.041392685
Maximum	2.093421685
Sum	899.7669003
Count	911
Largest(1)	2.093421685
Smallest(1)	0.041392685
Confidence Level(95.0%)	0.009847496

Cobalt - Site-Specific Expanded Metals Data Set



Cobalt - Site-Specific Expanded Metals Data Set - Log Transformed



**Copper - Site-Specific Expanded
Metals Data Set**

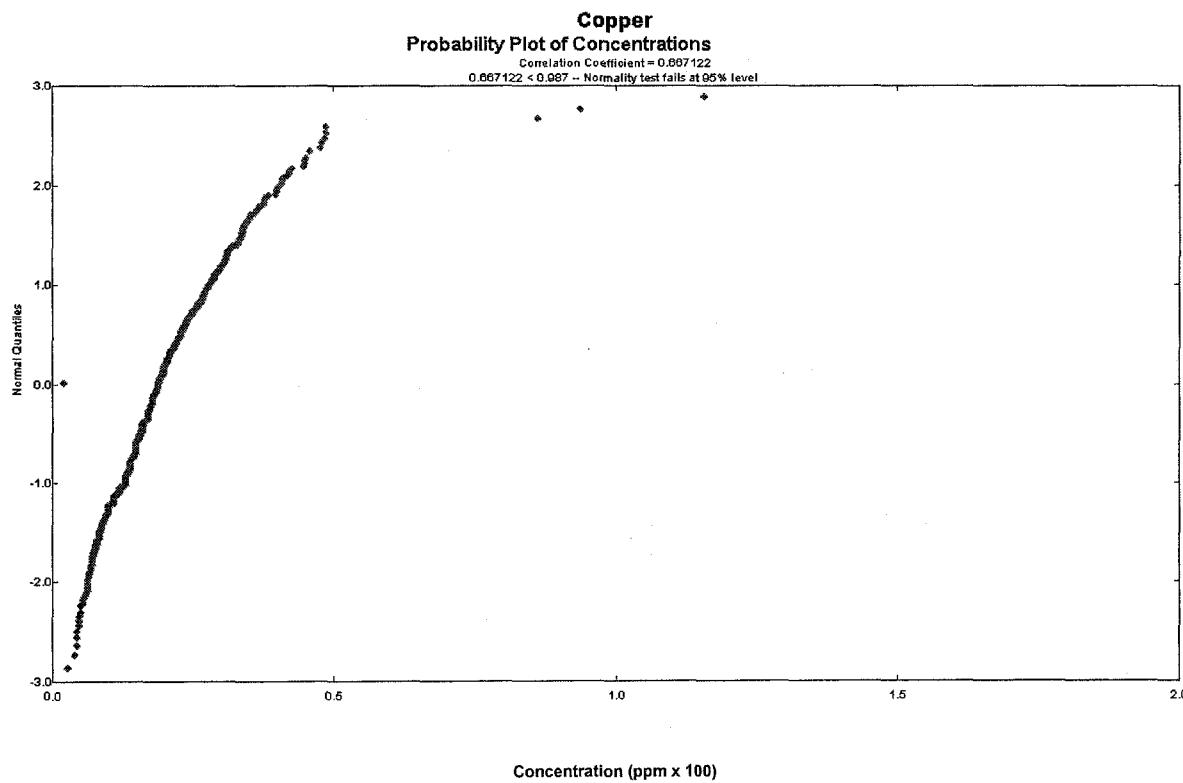
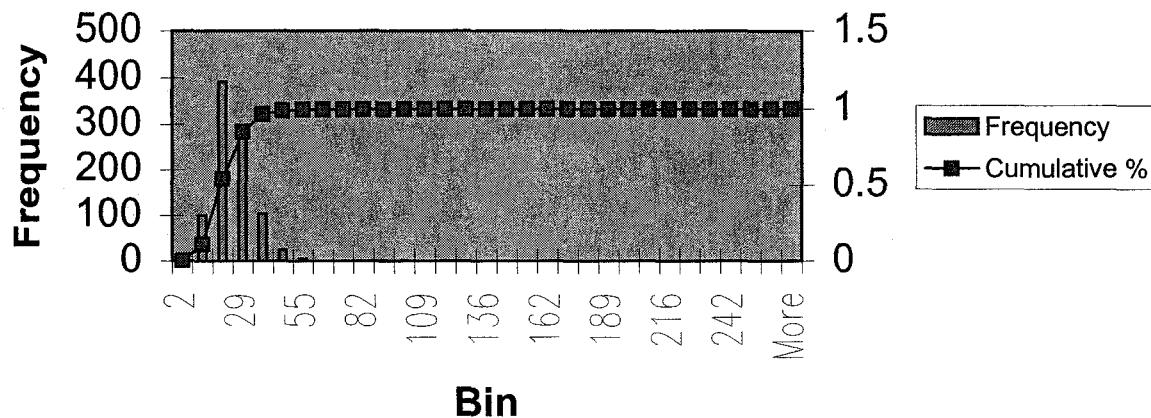
Mean	20.6586169
Standard Error	0.411659848
Median	19
Mode	15
Standard Deviation	12.42503719
Sample Variance	154.3815493
Kurtosis	180.2029576
Skewness	9.815371691
Range	266.9
Minimum	2.1
Maximum	269
Sum	18820
Count	911
Largest(1)	269
Smallest(1)	2.1
Confidence Level(95.0%)	0.807913688

**Copper - Site-Specific Expanded
Metals Data Set**

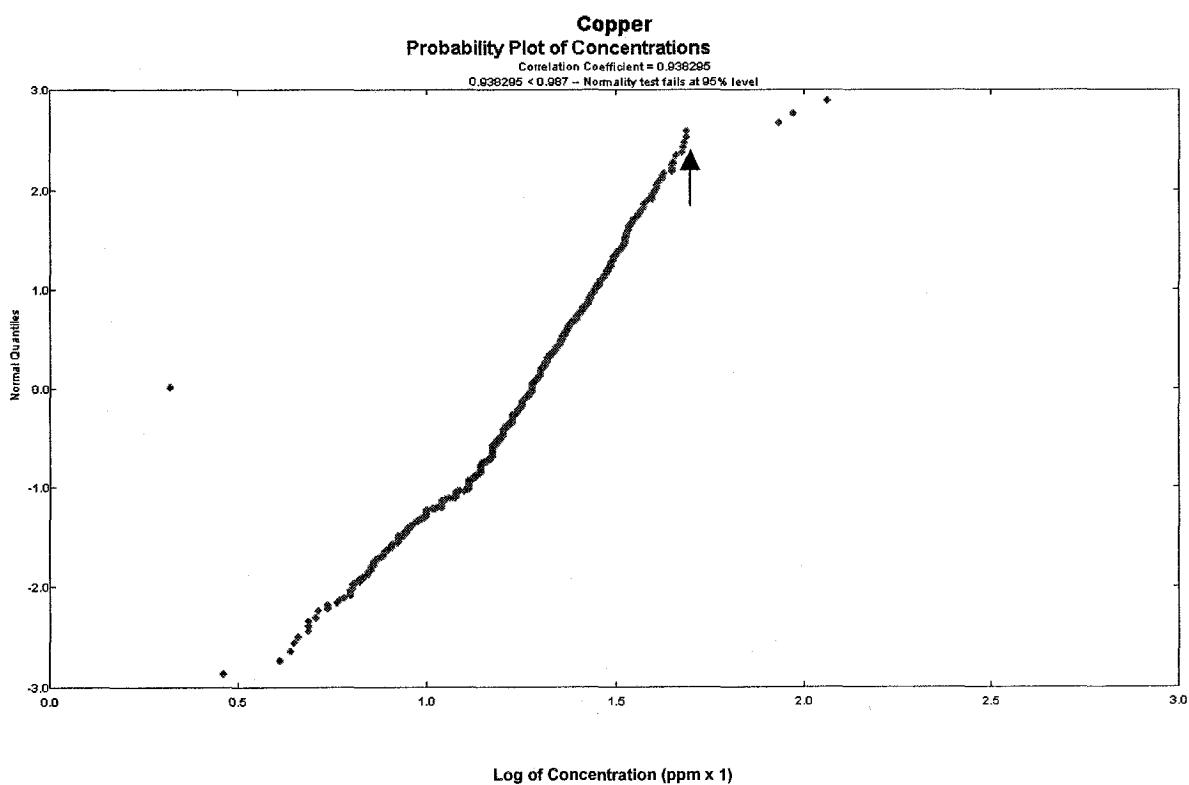
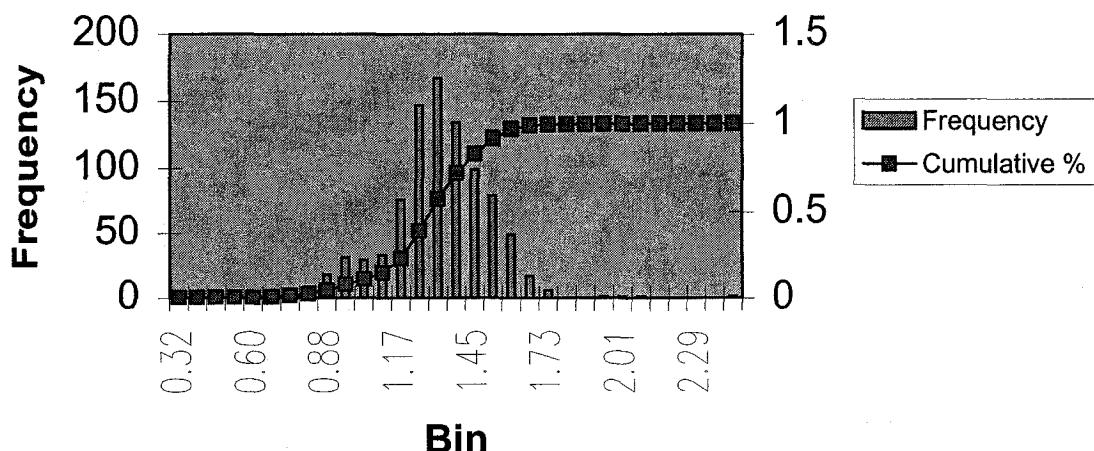
Log Transformed

Mean	1.269147303
Standard Error	0.006601468
Median	1.278753601
Mode	1.176091259
Standard Deviation	0.199250621
Sample Variance	0.03970081
Kurtosis	2.508723156
Skewness	-0.326973061
Range	2.107532985
Minimum	0.322219295
Maximum	2.42975228
Sum	1156.193193
Count	911
Largest(1)	2.42975228
Smallest(1)	0.322219295
Confidence Level(95.0%)	0.012955881

Copper - Site-Specific Expanded Metals Data Set



Copper - Site-Specific Expanded Metals Data Set - Log Transformed



**Lead - Site-Specific Expanded
Metals Data Set**

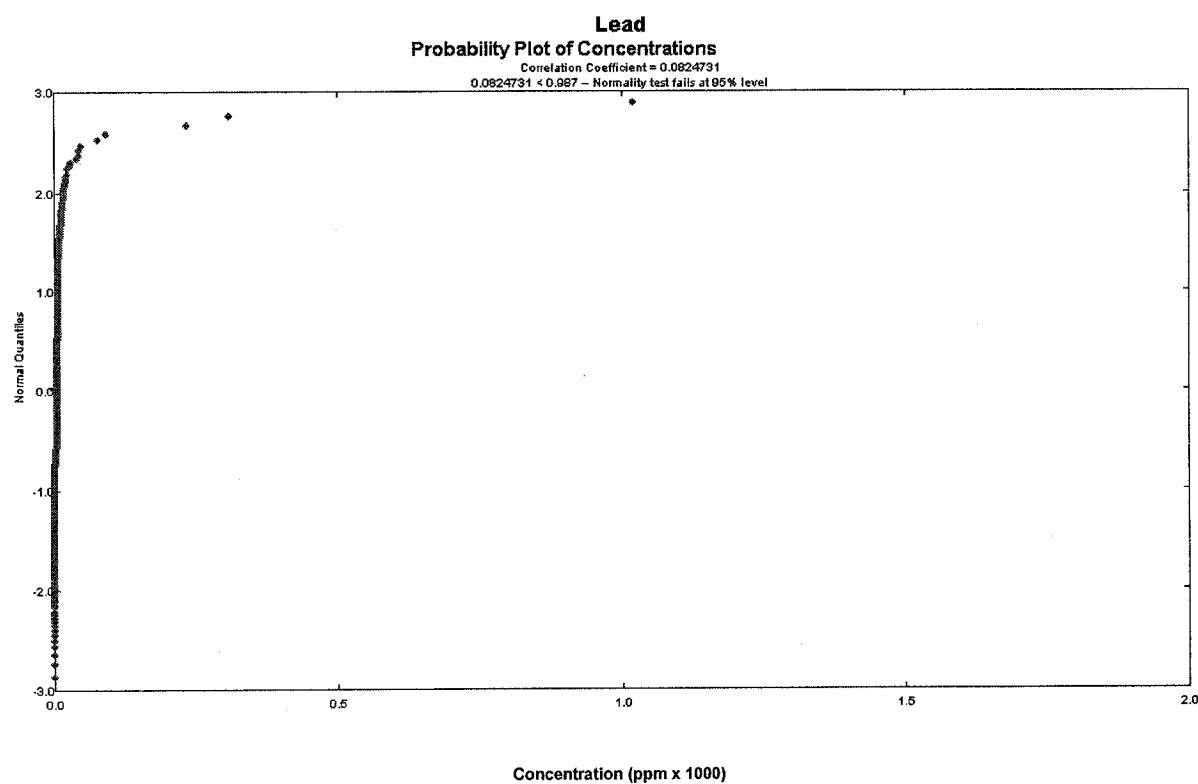
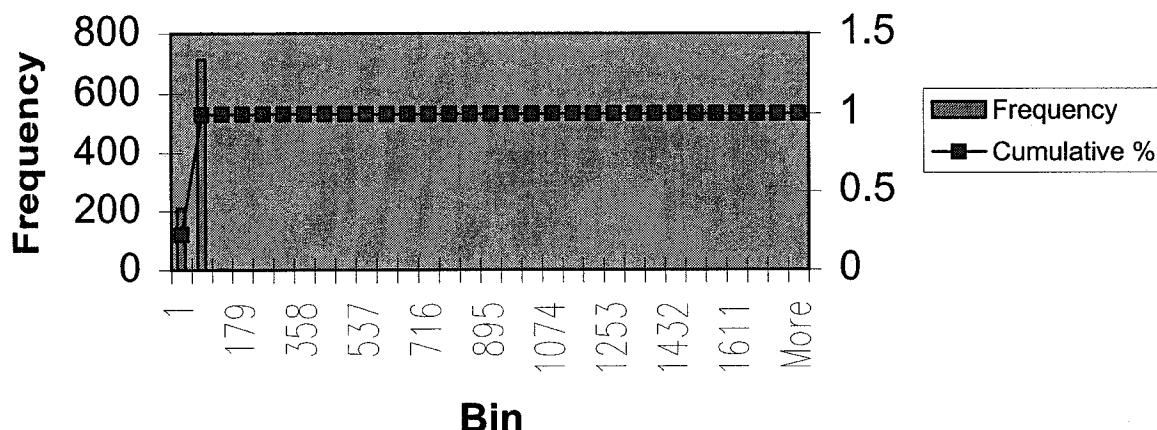
Mean	9.049311087
Standard Error	2.254110215
Median	5.4
Mode	0.5
Standard Deviation	68.70415526
Sample Variance	4720.26095
Kurtosis	538.0823416
Skewness	22.38518584
Range	1789.5
Minimum	0.5
Maximum	1790
Sum	8406.81
Count	929
Largest(1)	1790
Smallest(1)	0.5
Confidence Level(95.0%)	4.423749583

**Lead - Site-Specific Expanded
Metals Data Set**

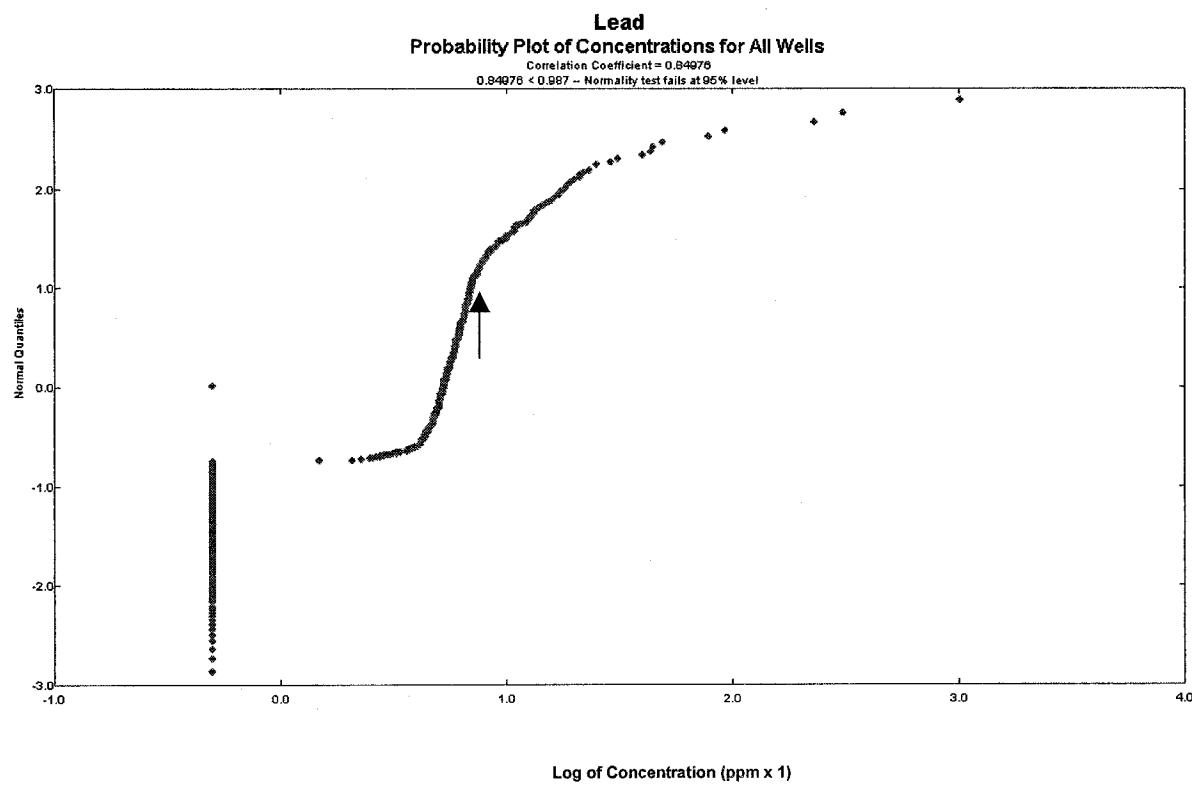
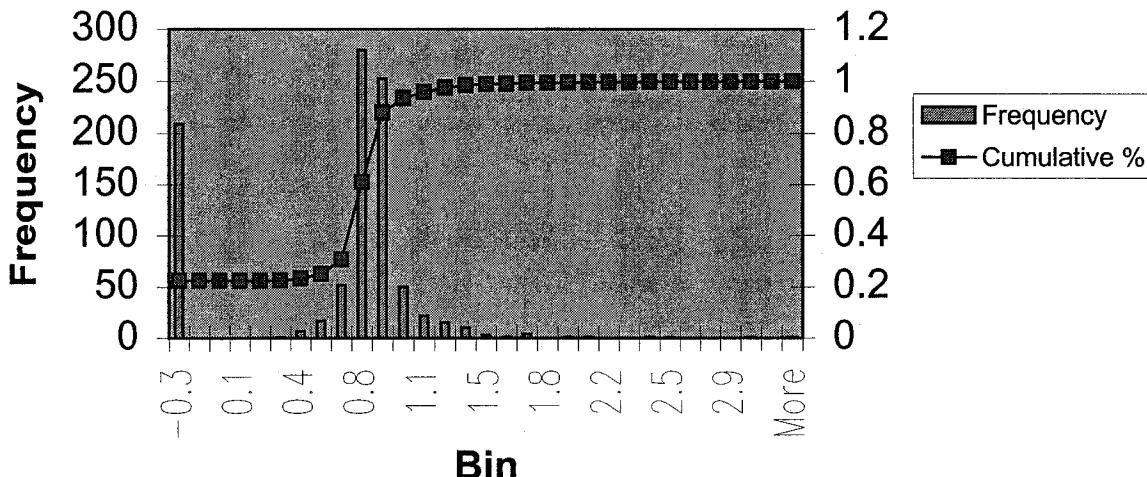
Log Transformed

Mean	0.551896214
Standard Error	0.016491098
Median	0.73239376
Mode	-0.301029996
Standard Deviation	0.502640448
Sample Variance	0.25264742
Kurtosis	1.245739537
Skewness	-0.417814583
Range	3.553883027
Minimum	-0.301029996
Maximum	3.252853031
Sum	512.7115831
Count	929
Largest(1)	3.252853031
Smallest(1)	-0.301029996
Confidence Level(95.0%)	0.032364207

Lead - Site-Specific Expanded Metals Data Set



Lead - Site-Specific Metals Expanded Data Set - Log Transformed



**Mercury - Site-Specific Expanded
Metals Data Set**

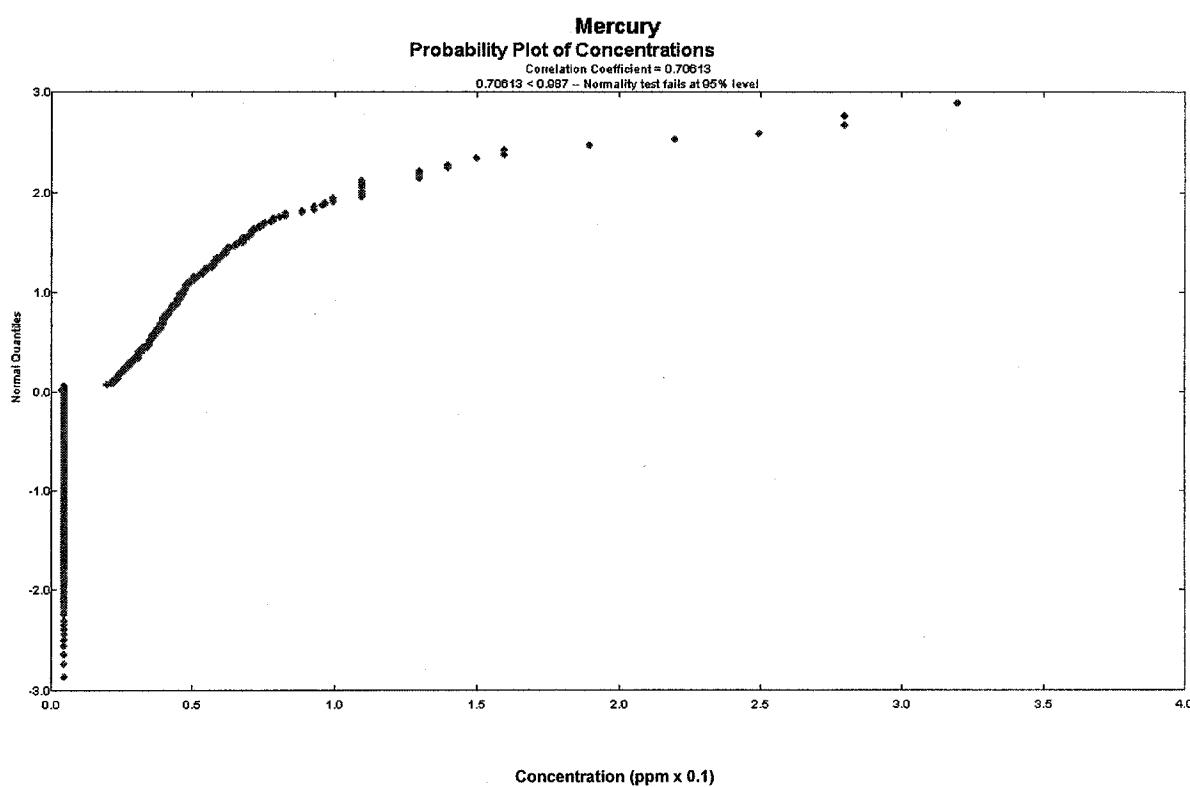
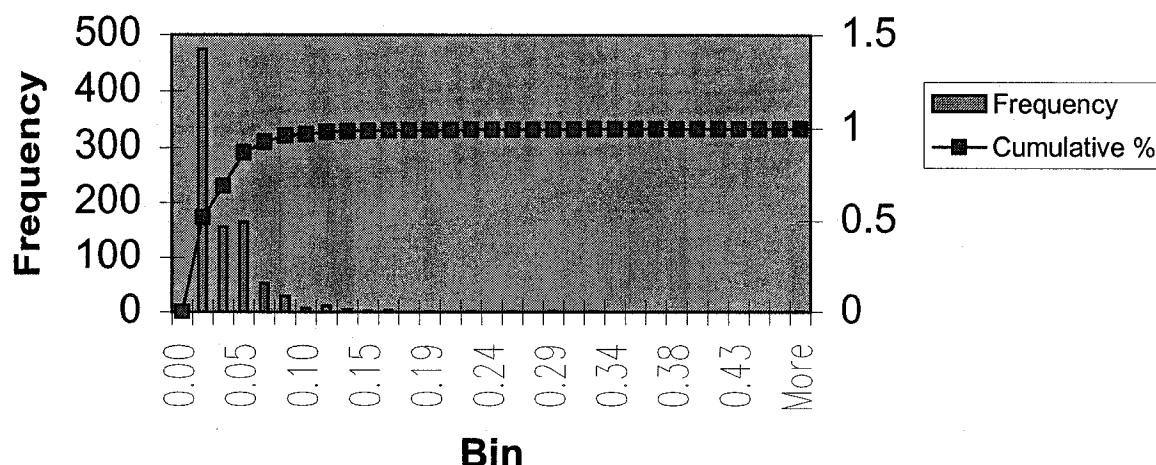
Mean	0.026477497
Standard Error	0.00117613
Median	0.005
Mode	0.005
Standard Deviation	0.035498882
Sample Variance	0.001260171
Kurtosis	42.41938407
Skewness	4.852279773
Range	0.476
Minimum	0.004
Maximum	0.48
Sum	24.121
Count	911
Largest(1)	0.48
Smallest(1)	0.004
Confidence Level(95.0%)	0.002308245

**Mercury - Site-Specific Expanded
Metals Data Set**

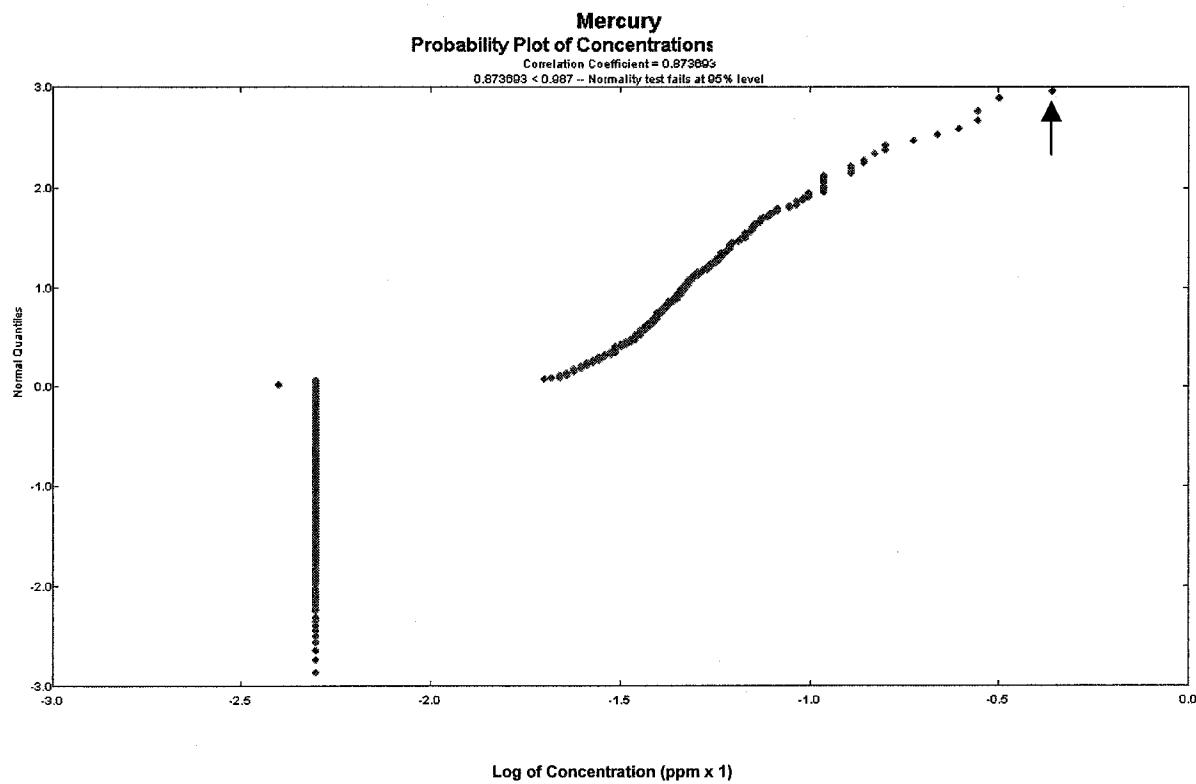
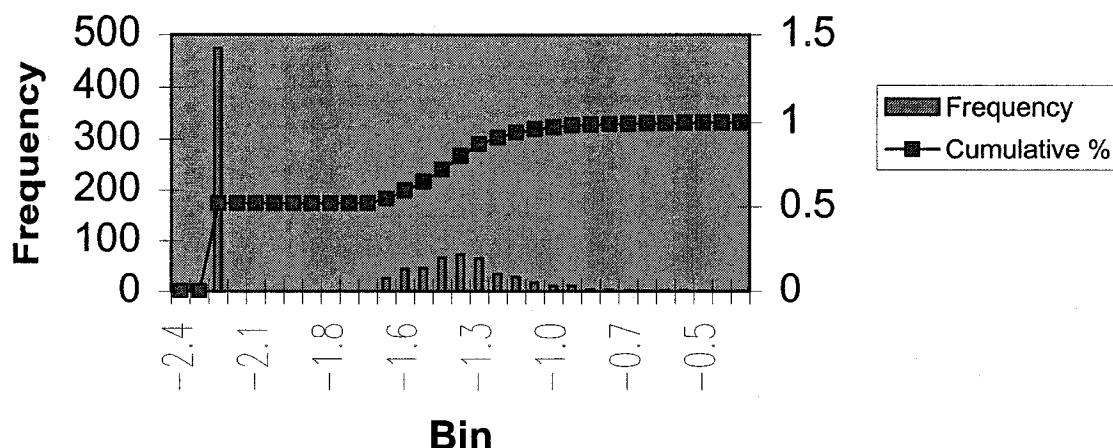
Log Transformed

Mean	-1.853473935
Standard Error	0.016206124
Median	-2.301029996
Mode	-2.301029996
Standard Deviation	0.489145809
Sample Variance	0.239263623
Kurtosis	-1.355397829
Skewness	0.382011378
Range	2.079181246
Minimum	-2.397940009
Maximum	-0.318758763
Sum	-1688.514755
Count	911
Largest(1)	-0.318758763
Smallest(1)	-2.397940009
Confidence Level(95.0%)	0.031805747

Mercury - Site-Specific Expanded Metals Data Set



Mercury - Site-Specific Expanded Metals Data Set - Log Transformed



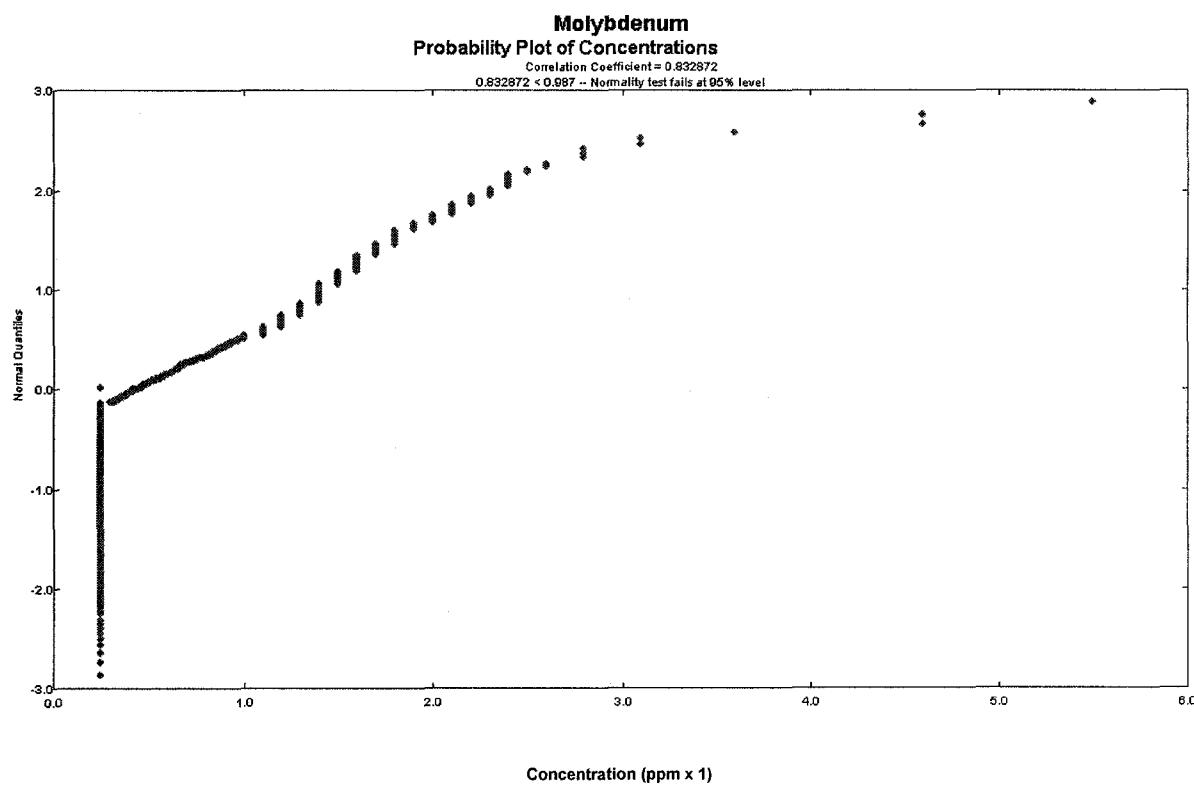
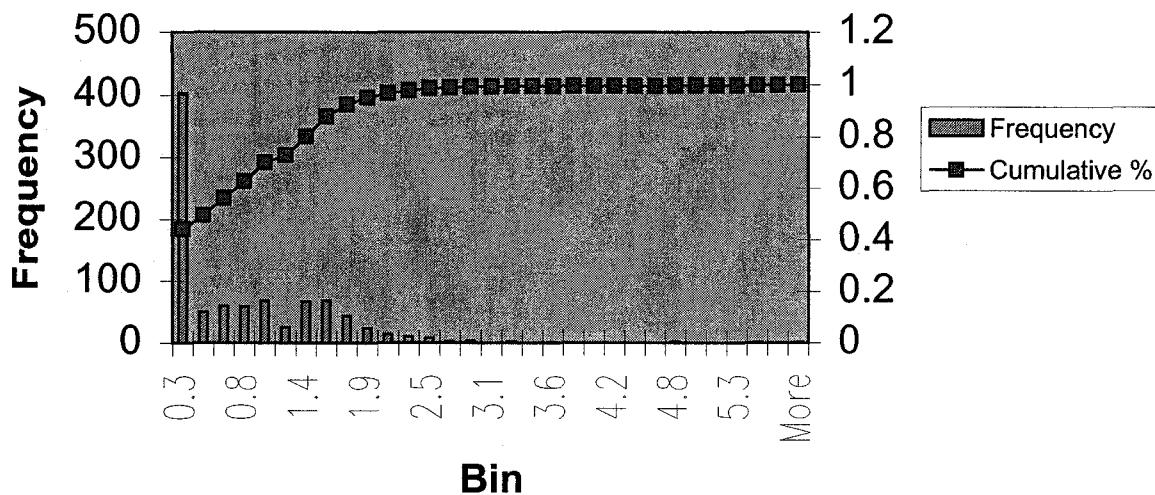
**Molybdenum - Site-Specific
Expanded Metals Data Set**

Mean	0.759660088
Standard Error	0.022302616
Median	0.455
Mode	0.25
Standard Deviation	0.673524239
Sample Variance	0.453634901
Kurtosis	8.226986852
Skewness	2.067225881
Range	5.65
Minimum	0.25
Maximum	5.9
Sum	692.81
Count	912
Largest(1)	5.9
Smallest(1)	0.25
Confidence Level(95.0%)	0.043770475

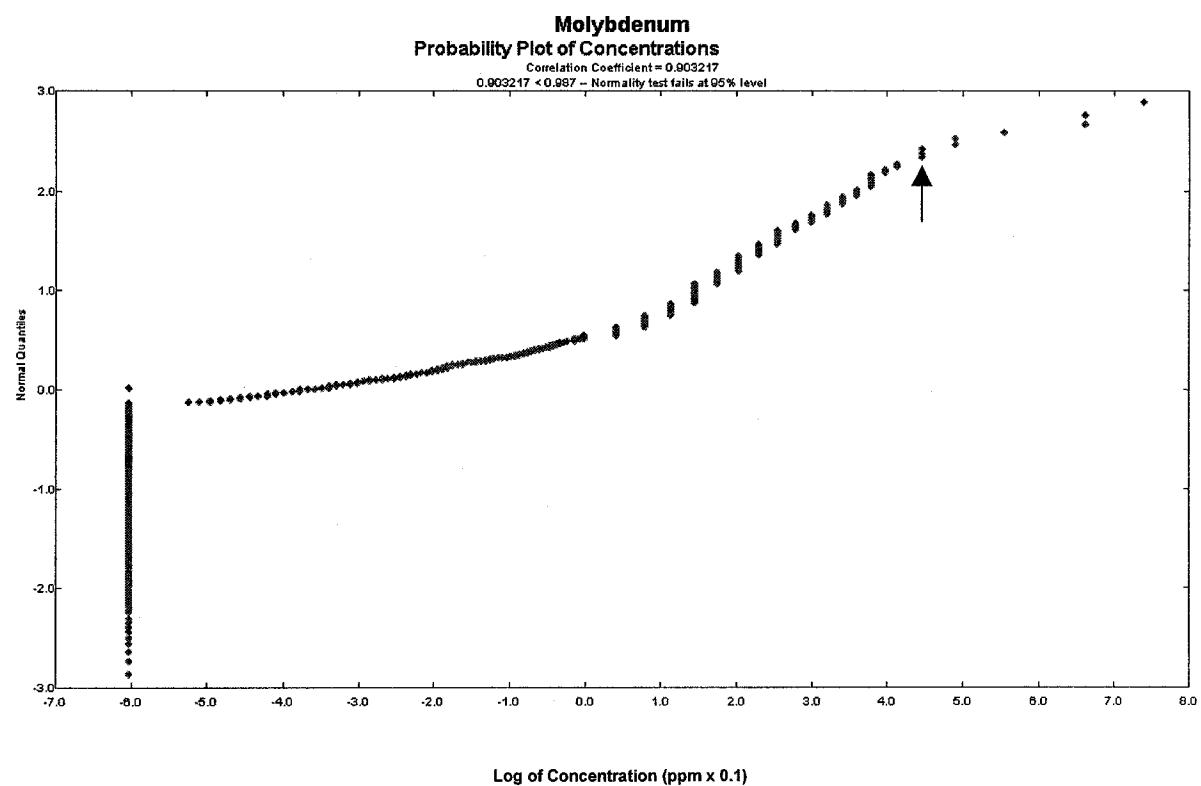
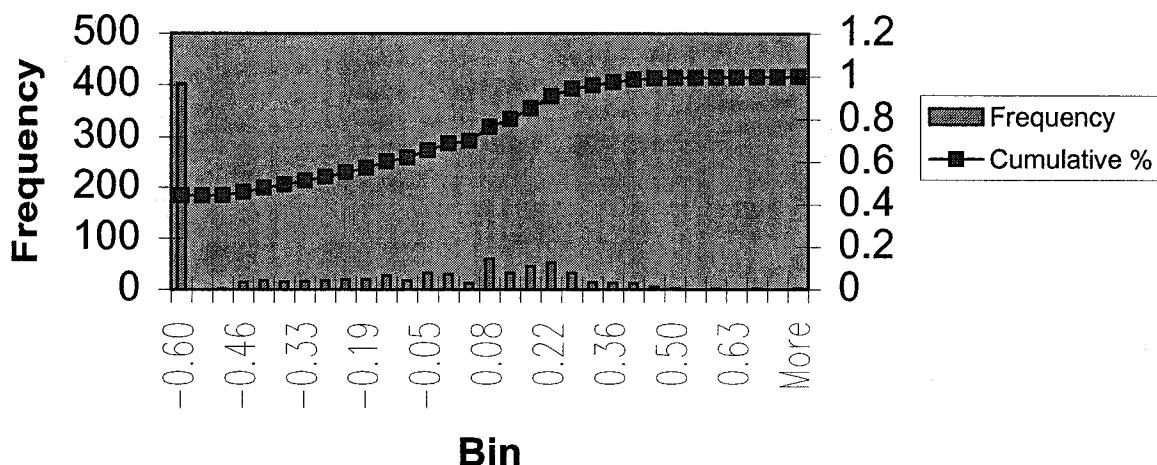
**Molybdenum - Site-Specific
Expanded Metals Data Set
Log Transformed**

Mean	-0.265390139
Standard Error	0.011579461
Median	-0.342014827
Mode	-0.602059991
Standard Deviation	0.349692067
Sample Variance	0.122284542
Kurtosis	-1.270361379
Skewness	0.428849701
Range	1.372912003
Minimum	-0.602059991
Maximum	0.770852012
Sum	-242.0358064
Count	912
Largest(1)	0.770852012
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.022725519

Molybdenum - Site-Specific Expanded Metals Data Set



Molybdenum - Site-Specific Expanded Metals Data Set - Log Transformed



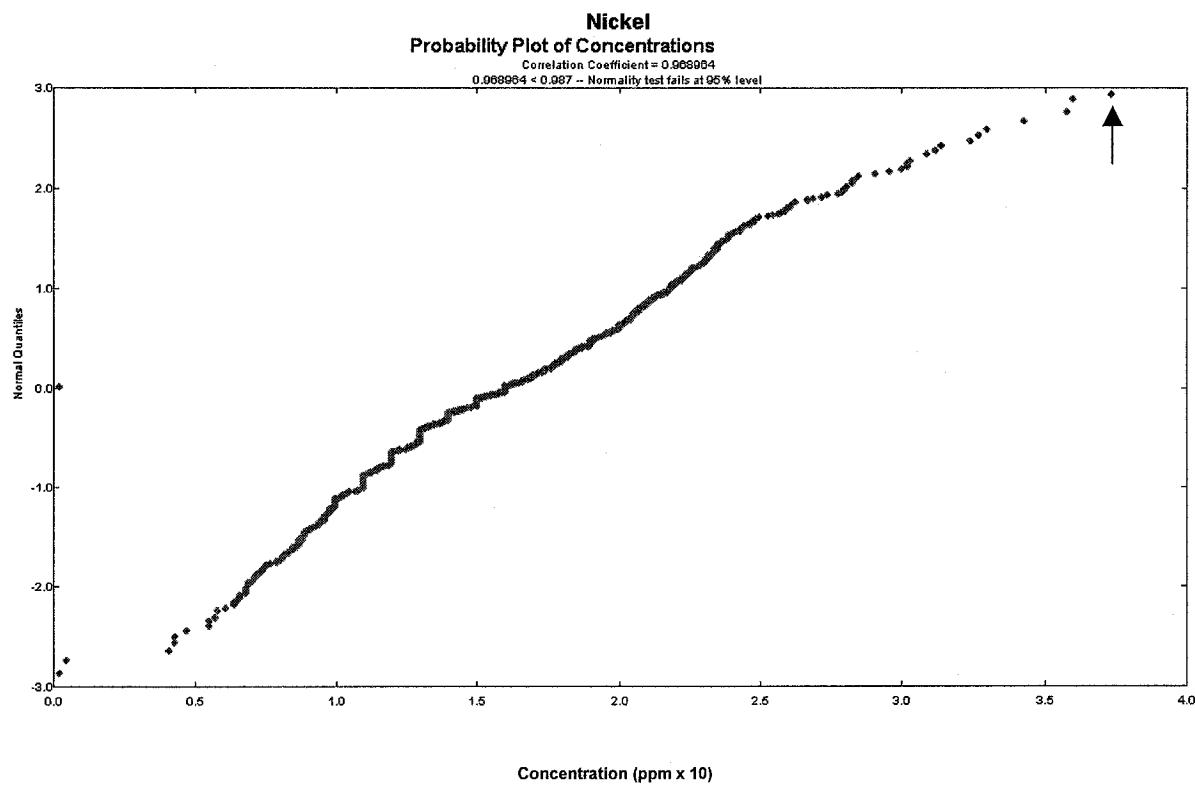
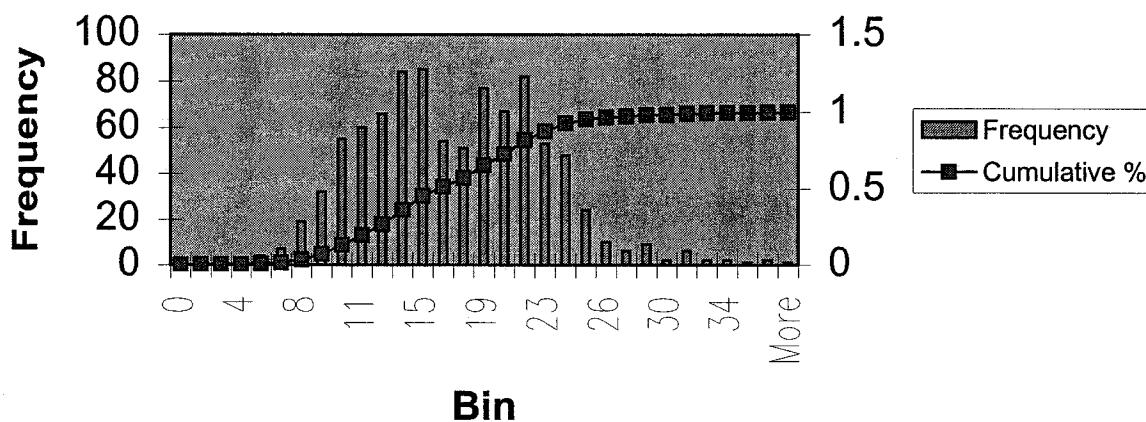
**Nickel - Site-Specific Expanded
Metals Data Set**

Mean	16.37785088
Standard Error	0.181271508
Median	16
Mode	13
Standard Deviation	5.474279505
Sample Variance	29.9677361
Kurtosis	0.197519885
Skewness	0.327646
Range	37.15
Minimum	0.25
Maximum	37.4
Sum	14936.6
Count	912
Largest(1)	37.4
Smallest(1)	0.25
Confidence Level(95.0%)	0.355758266

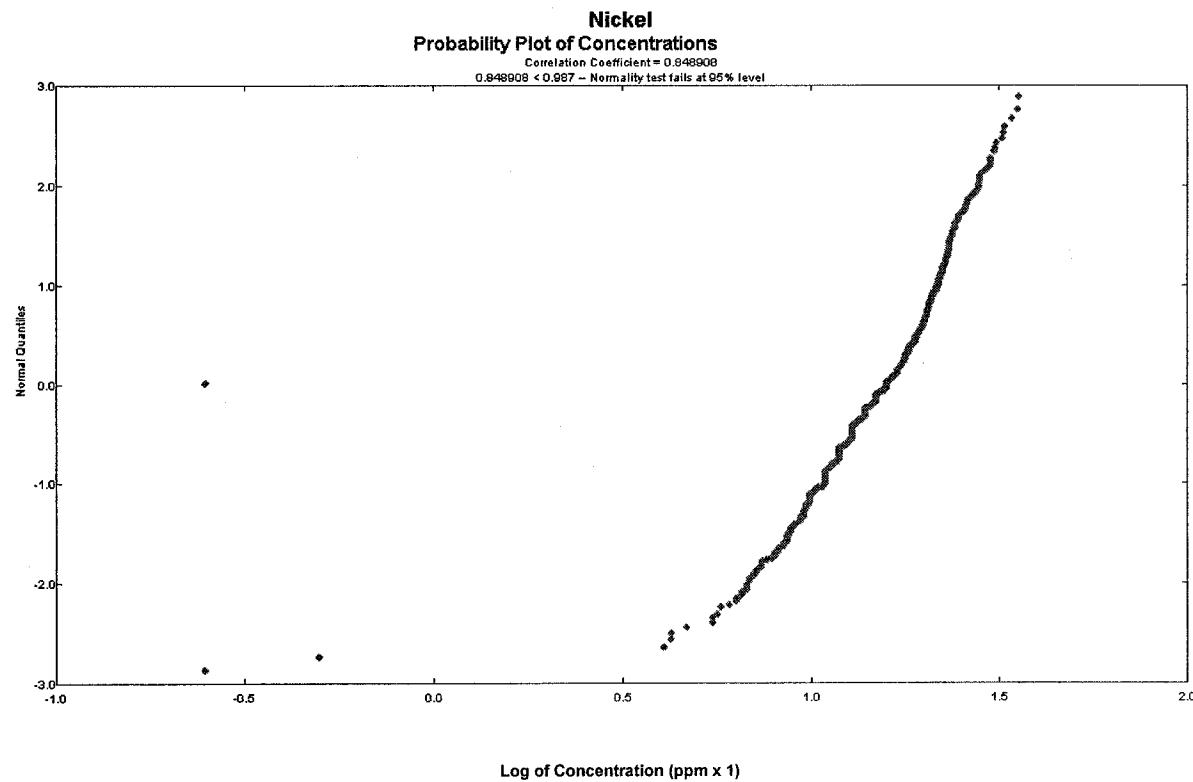
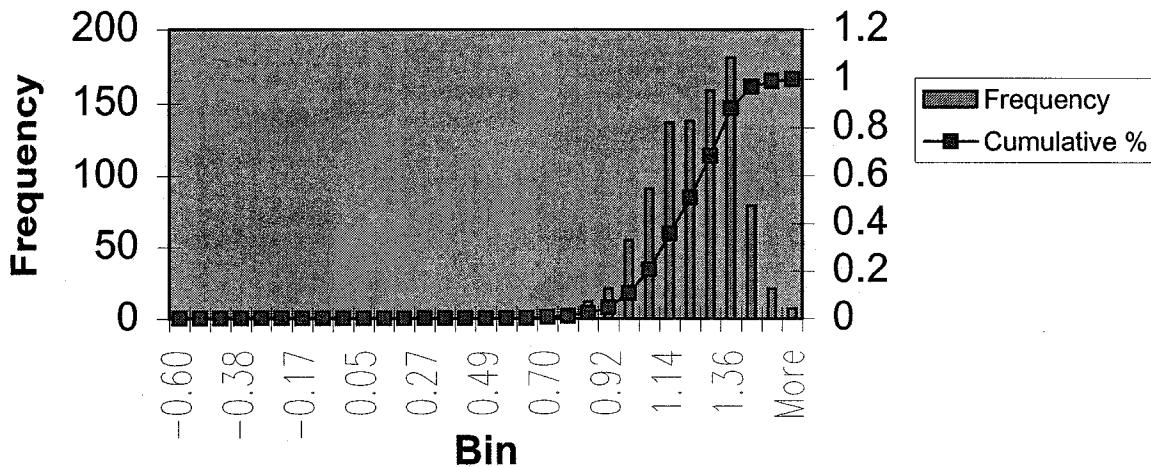
**Nickel - Site-Specific Expanded
Metals Data Set
Log Transformed**

Mean	1.184972448
Standard Error	0.005976692
Median	1.204119983
Mode	1.113943352
Standard Deviation	0.180492153
Sample Variance	0.032577417
Kurtosis	24.89071932
Skewness	-2.992340679
Range	2.174931594
Minimum	-0.602059991
Maximum	1.572871602
Sum	1080.694872
Count	912
Largest(1)	1.572871602
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.011729685

Nickel - Site-Specific Expanded Metals Data Set



Nickel - Site-Specific Expanded Metals Data Set - Log Transformed



Selenium - Site-Specific Expanded Metals Data Set

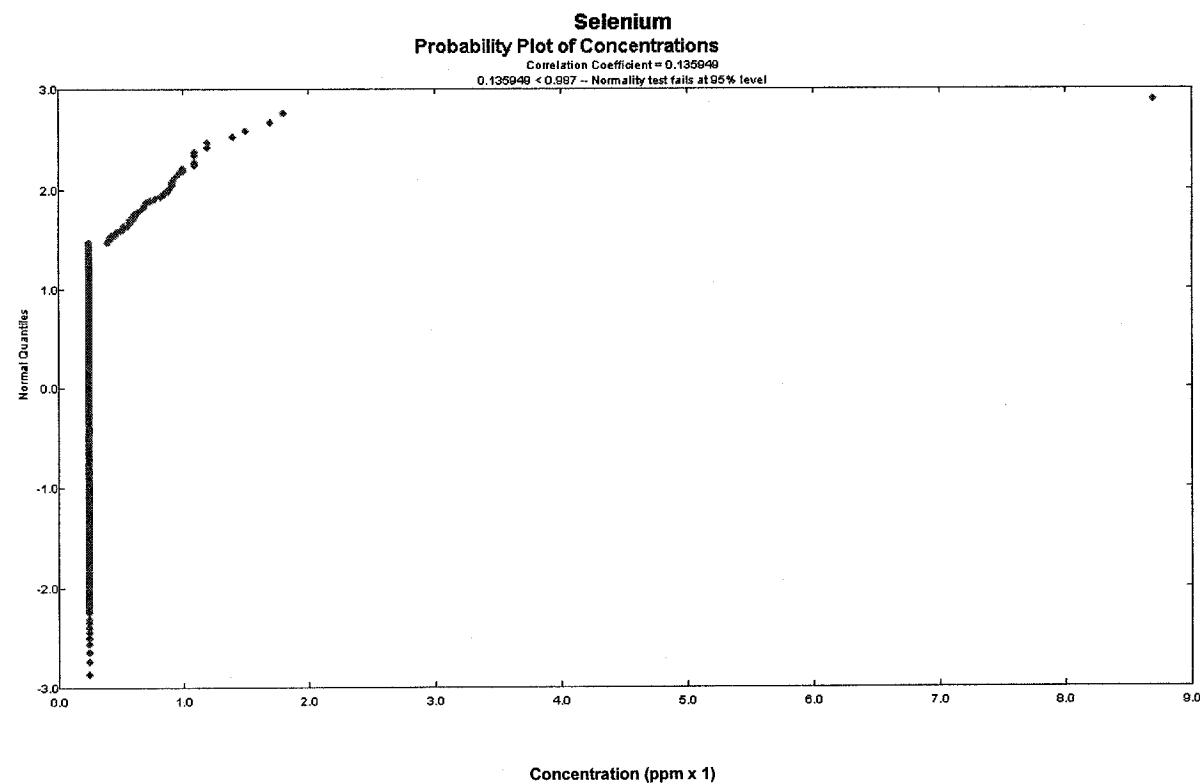
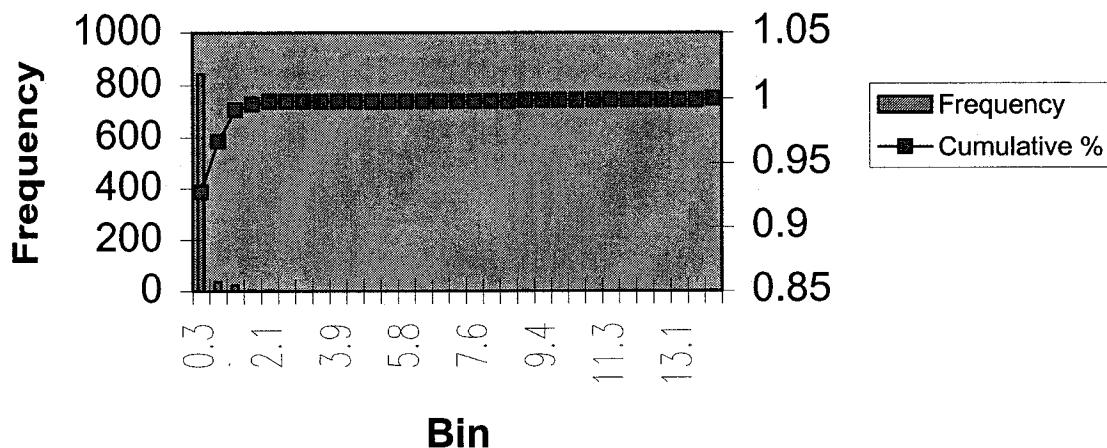
Mean	0.310165017
Standard Error	0.018412971
Median	0.25
Mode	0.25
Standard Deviation	0.55514422
Sample Variance	0.308185105
Kurtosis	464.9951317
Skewness	20.46712684
Range	13.75
Minimum	0.25
Maximum	14
Sum	281.94
Count	909
Largest(1)	14
Smallest(1)	0.25
Confidence Level(95.0%)	0.036136937

Selenium - Site-Specific Expanded Metals Data Set

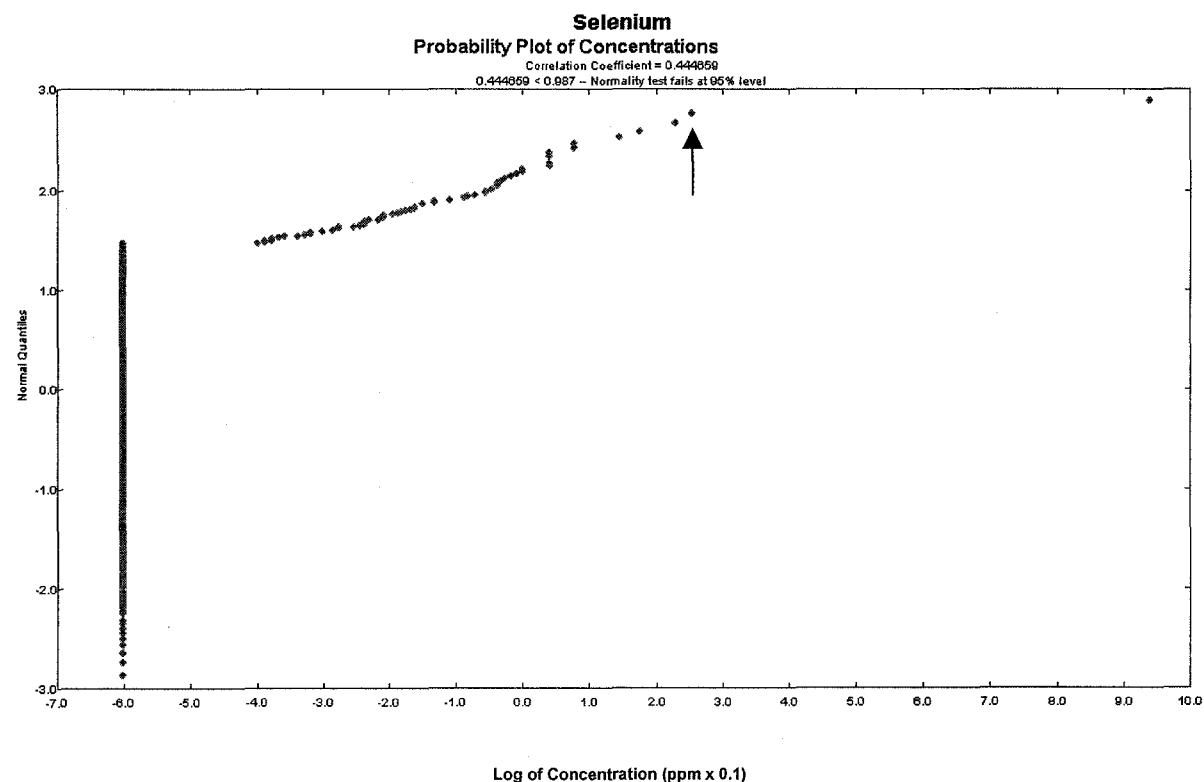
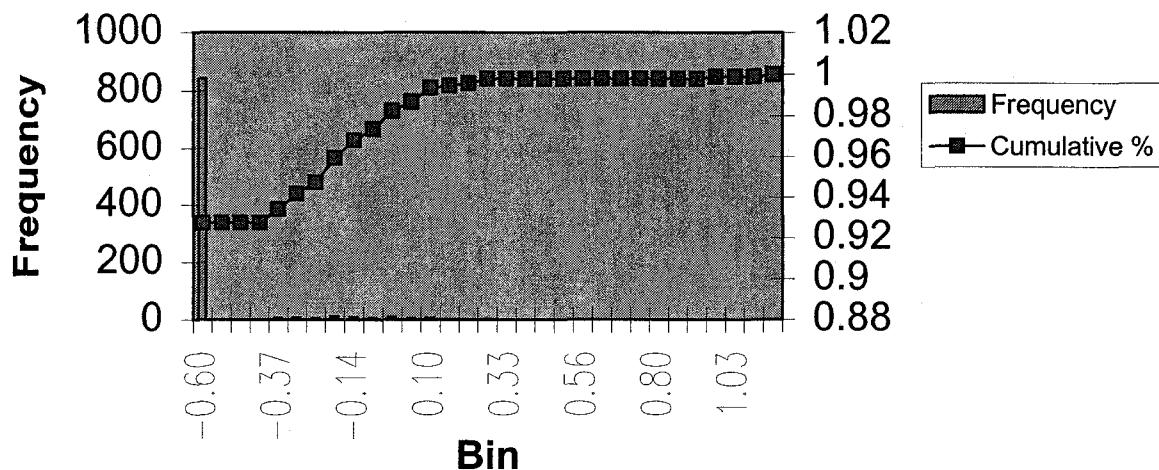
Log Transformed

Mean	-0.566766311
Standard Error	0.004788652
Median	-0.602059991
Mode	-0.602059991
Standard Deviation	0.14437607
Sample Variance	0.020844449
Kurtosis	42.14039625
Skewness	5.565653754
Range	1.748188027
Minimum	-0.602059991
Maximum	1.146128036
Sum	-515.1905771
Count	909
Largest(1)	1.146128036
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.009398115

Selenium - Site-Specific Expanded Metals Data Set



Selenium - Site-Specific Expanded Metals Data Set - Log Transformed



**Silver - Site-Specific Expanded
Metals Data Set**

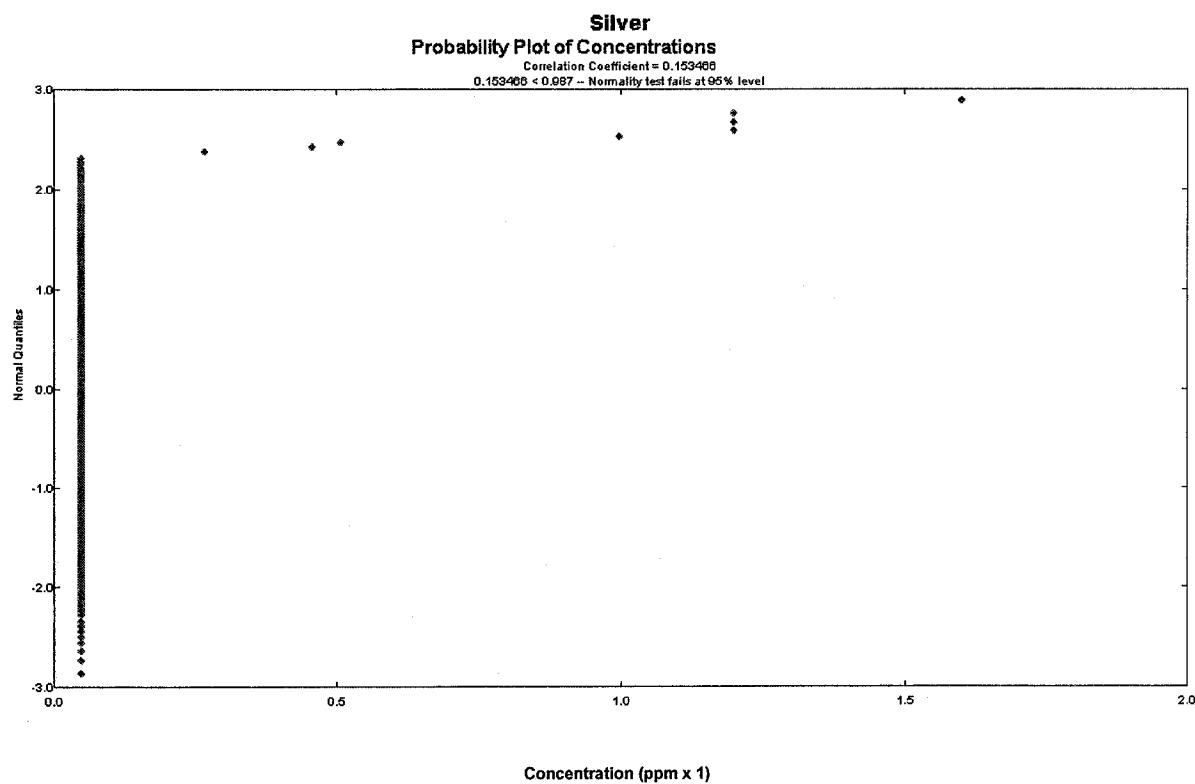
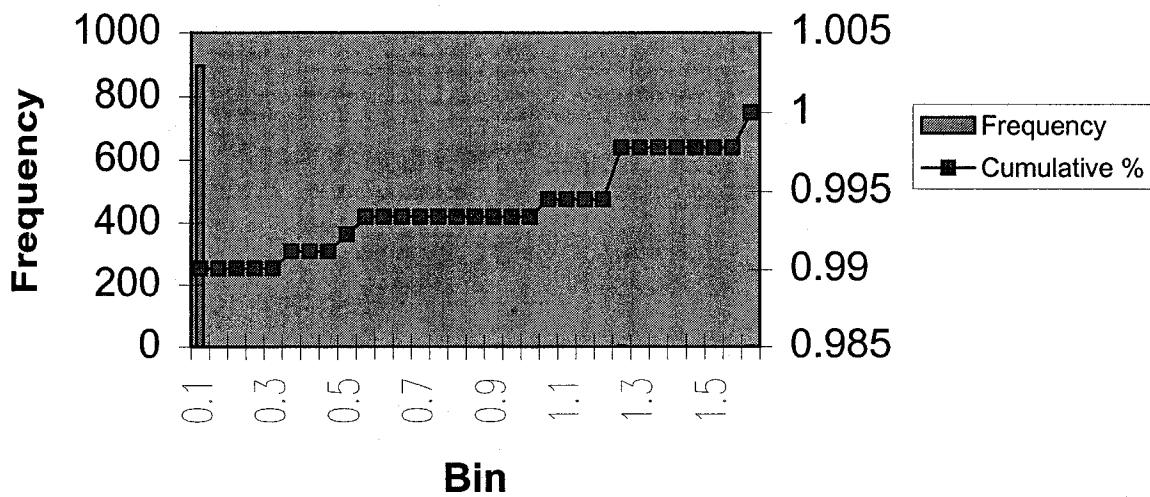
Mean	0.059470783
Standard Error	0.003492239
Median	0.05
Mode	0.05
Standard Deviation	0.105173807
Sample Variance	0.01106153
Kurtosis	153.1062025
Skewness	12.13191146
Range	1.55
Minimum	0.05
Maximum	1.6
Sum	53.94
Count	907
Largest(1)	1.6
Smallest(1)	0.05
Confidence Level(95.0%)	0.006853816

**Silver - Site-Specific Expanded
Metals Data Set**

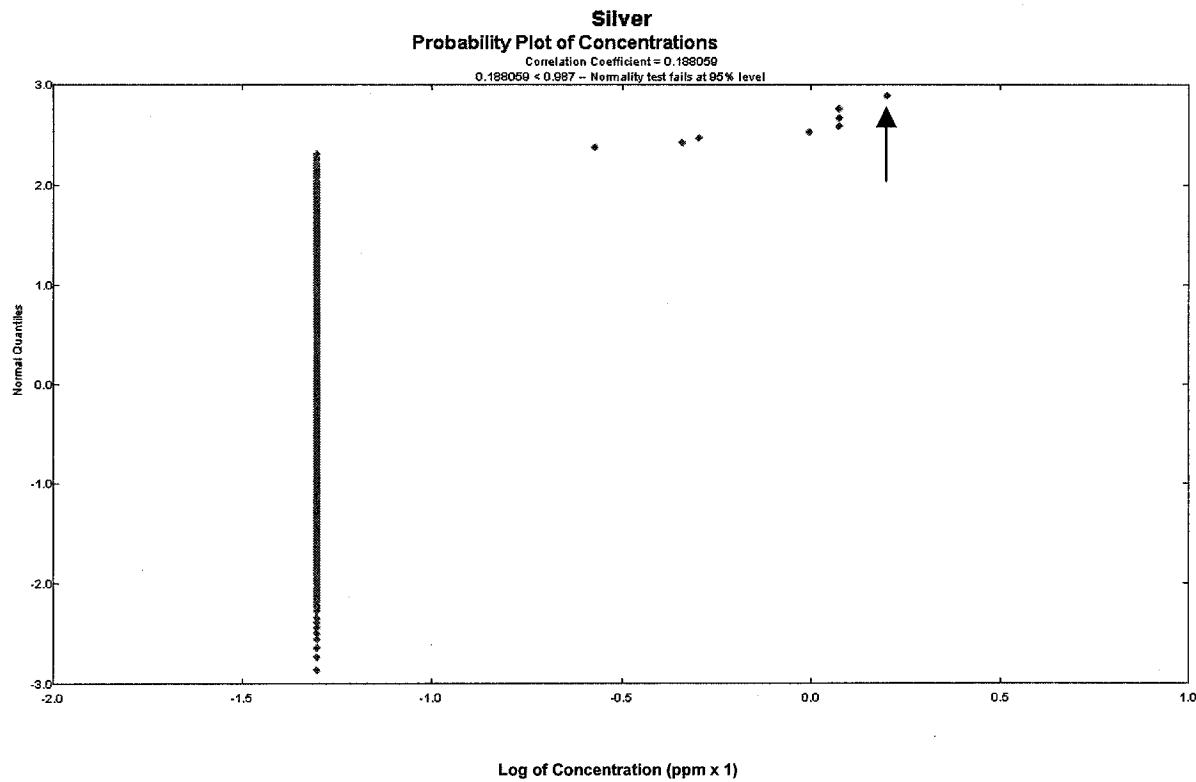
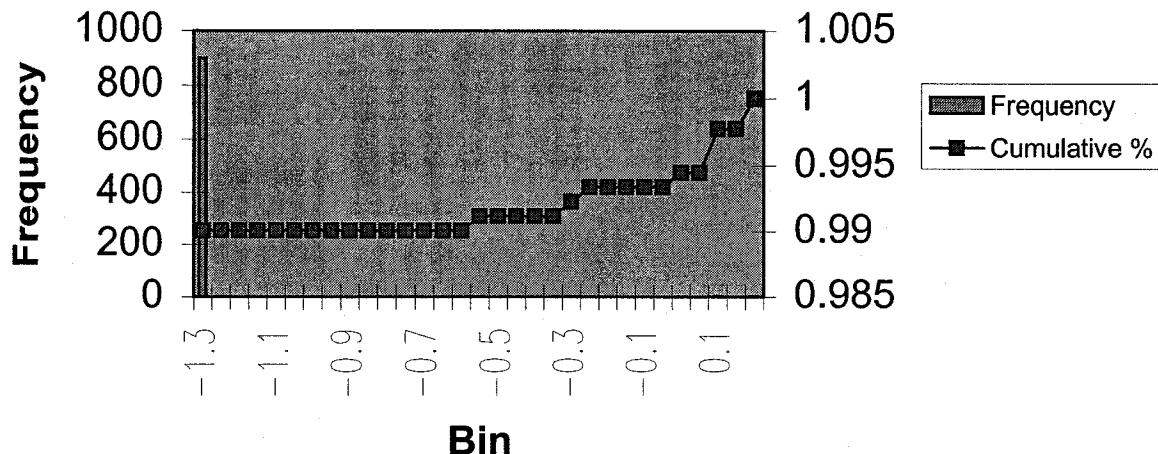
Log Transformed

Mean	-1.288729284
Standard Error	0.004169229
Median	-1.301029996
Mode	-1.301029996
Standard Deviation	0.125562343
Sample Variance	0.015765902
Kurtosis	109.9448481
Skewness	10.44675729
Range	1.505149978
Minimum	-1.301029996
Maximum	0.204119983
Sum	-1168.877461
Count	907
Largest(1)	0.204119983
Smallest(1)	-1.301029996
Confidence Level(95.0%)	0.008182467

Silver - Site-Specific Expanded Metals Data Set



Silver - Site-Specific Expanded Metals Data Set - Log Transformed



**Thallium - Site-Specific Expanded
Metals Data Set**

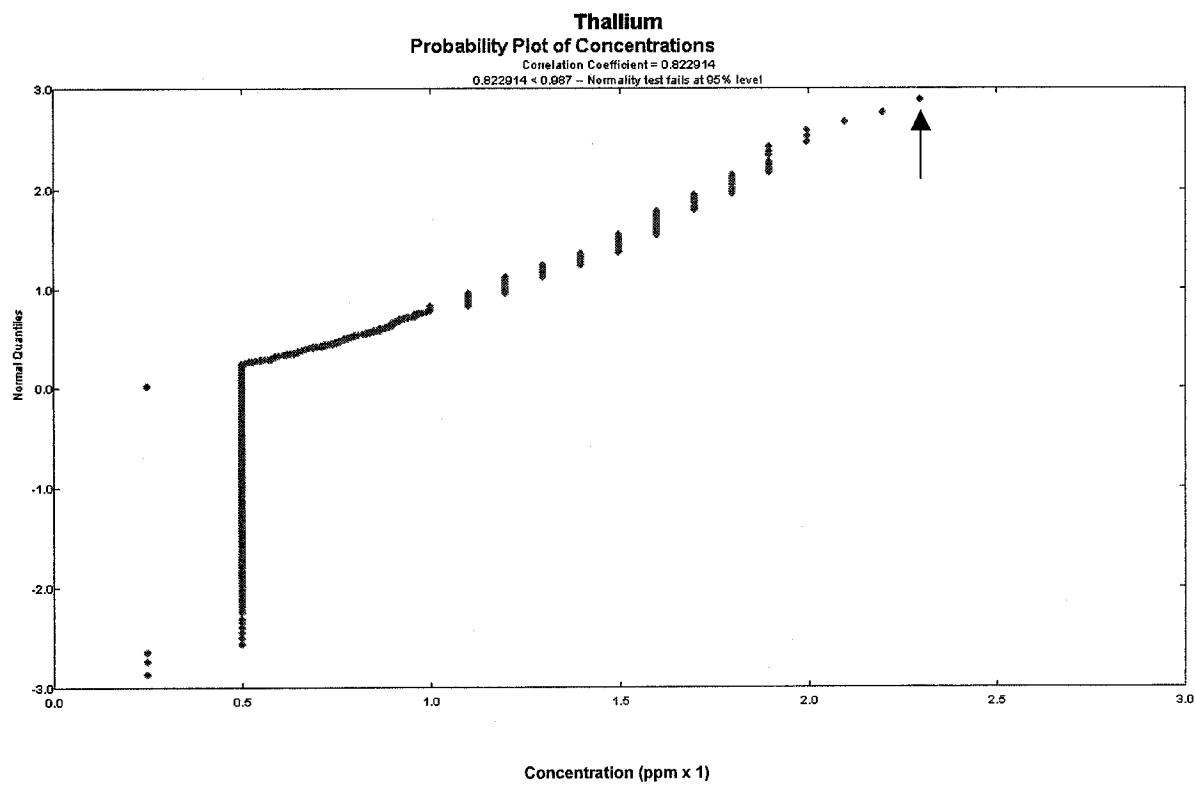
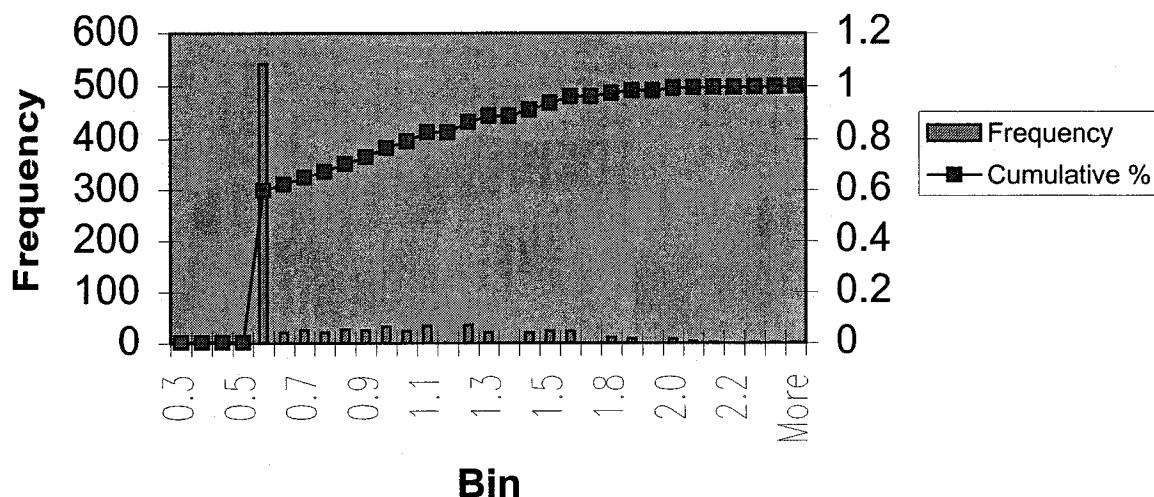
Mean	0.74884742
Standard Error	0.012932525
Median	0.5
Mode	0.5
Standard Deviation	0.390339511
Sample Variance	0.152364934
Kurtosis	1.375503966
Skewness	1.50667509
Range	2.15
Minimum	0.25
Maximum	2.4
Sum	682.2
Count	911
Largest(1)	2.4
Smallest(1)	0.25
Confidence Level(95.0%)	0.025381062

**Thallium - Site-Specific Expanded
Metals Data Set**

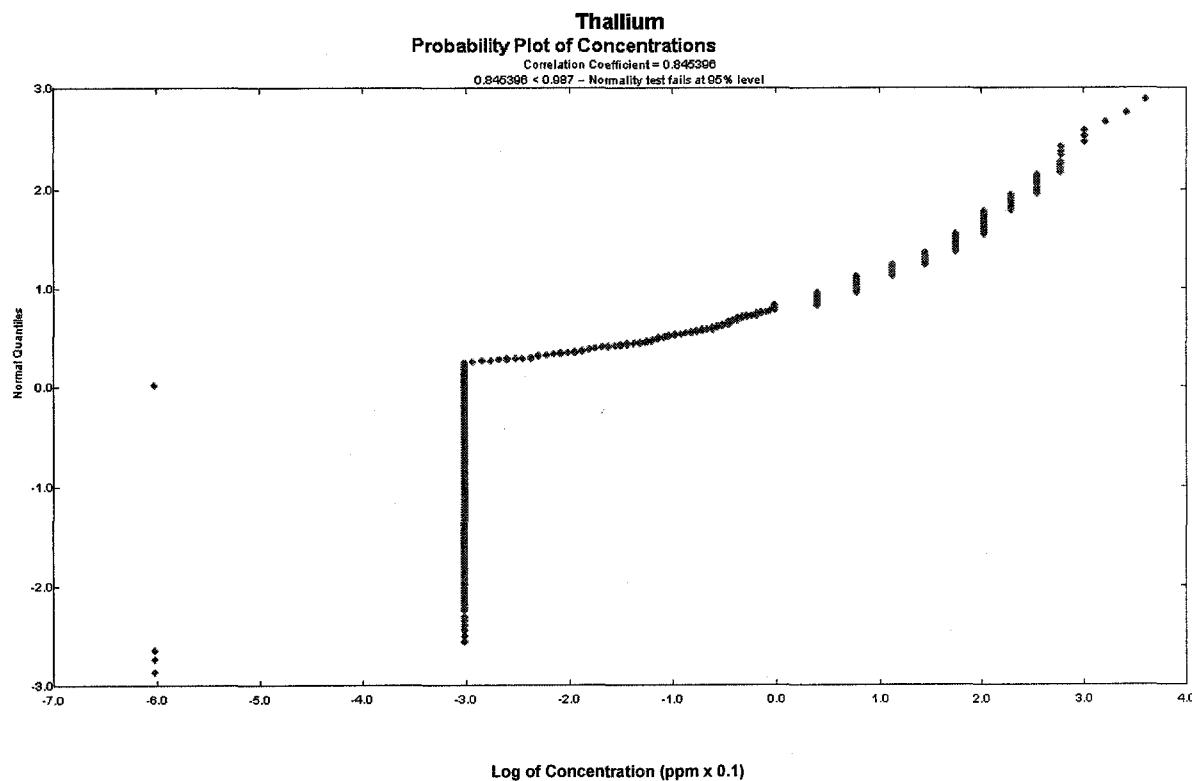
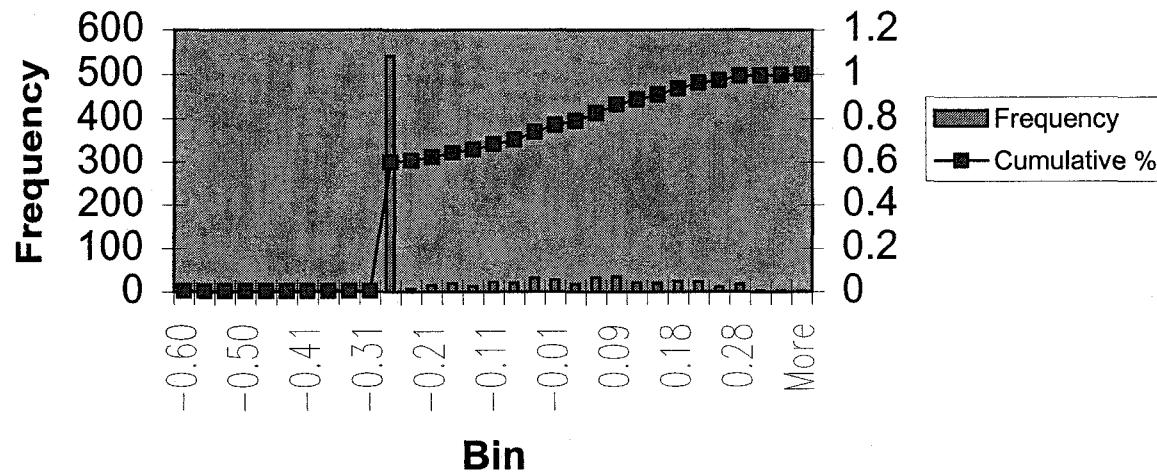
Log Transformed

Mean	-0.171332163
Standard Error	0.006210914
Median	-0.301029996
Mode	-0.301029996
Standard Deviation	0.18746262
Sample Variance	0.035142234
Kurtosis	-0.283841917
Skewness	0.999312162
Range	0.982271233
Minimum	-0.602059991
Maximum	0.380211242
Sum	-156.0836007
Count	911
Largest(1)	0.380211242
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.012189389

Thallium - Site-Specific Expanded Metals Data Set



Thallium - Site-Specific Expanded Metals Data Set - Log Transformed



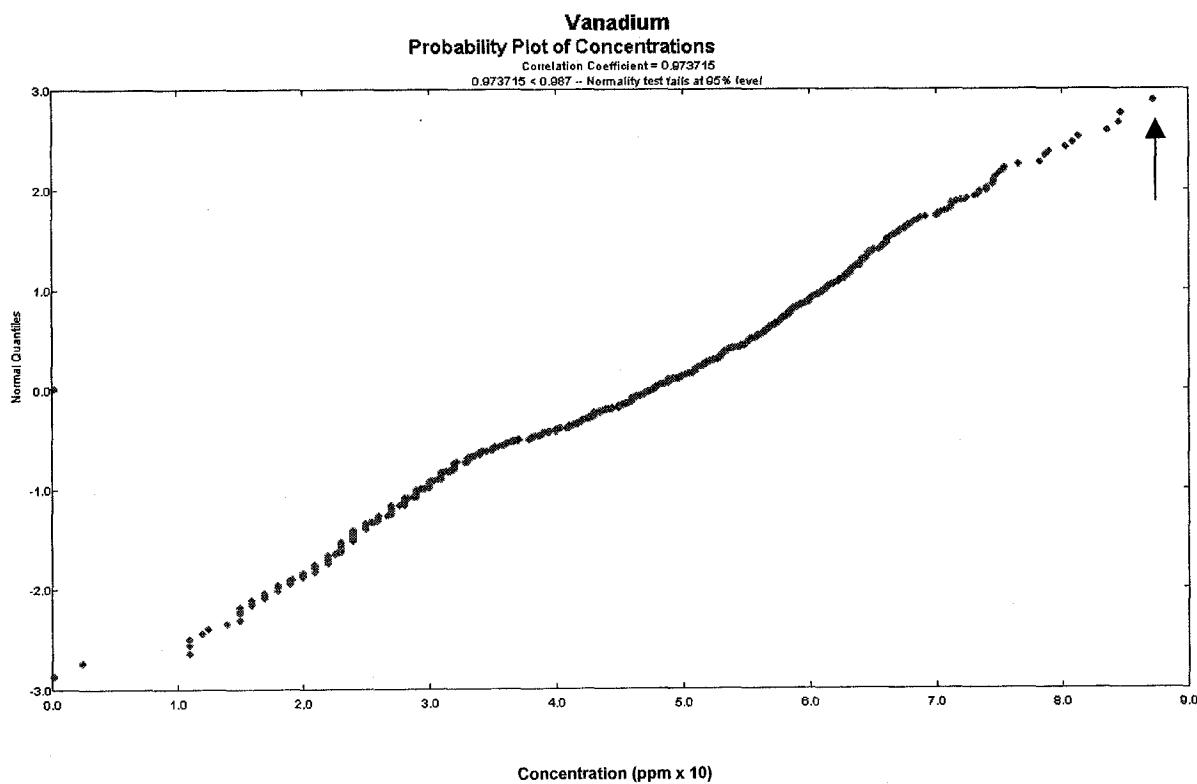
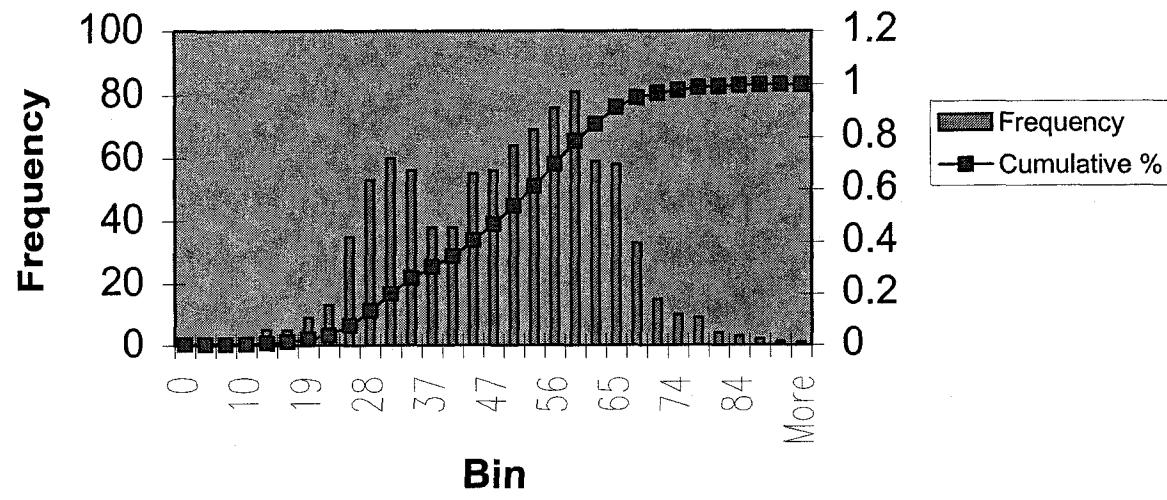
**Vanadium - Site-Specific
Expanded Metals Data Set**

Mean	46.46608123
Standard Error	0.497119987
Median	48
Mode	31
Standard Deviation	15.00446149
Sample Variance	225.1338647
Kurtosis	-0.481044024
Skewness	-0.140215406
Range	92.75
Minimum	0.25
Maximum	93
Sum	42330.6
Count	911
Largest(1)	93
Smallest(1)	0.25
Confidence Level(95.0%)	0.975635696

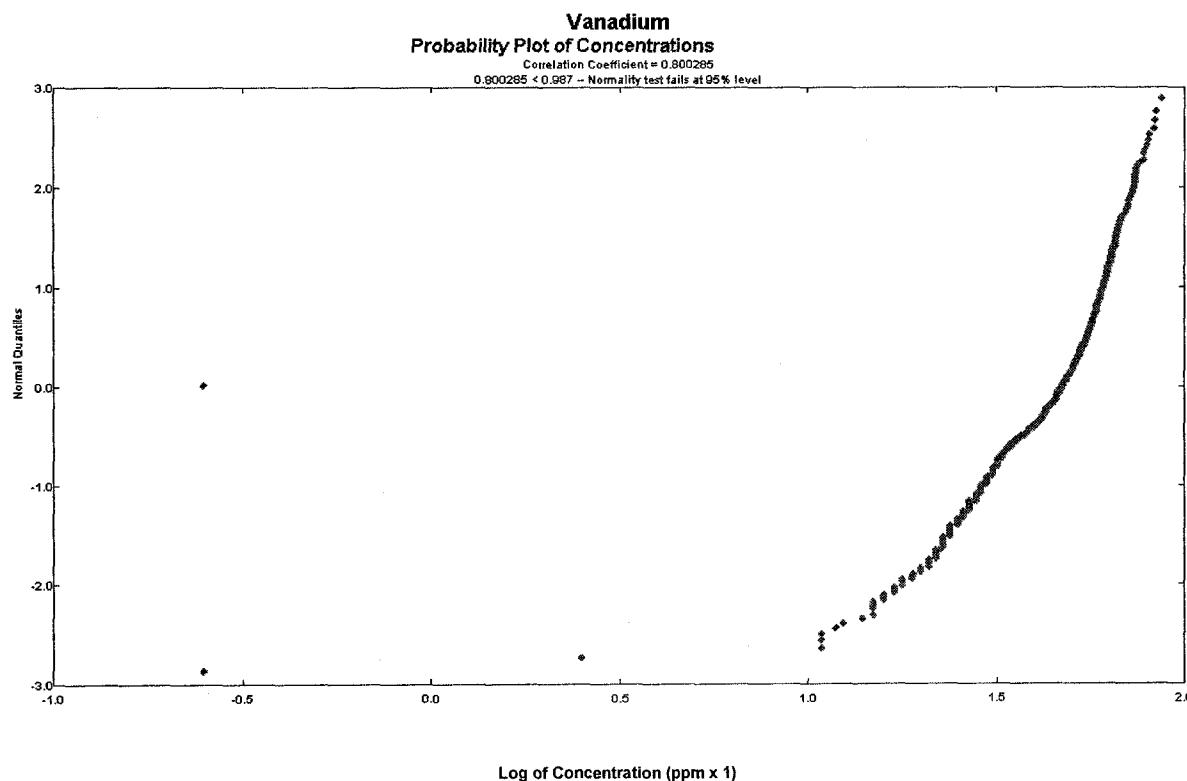
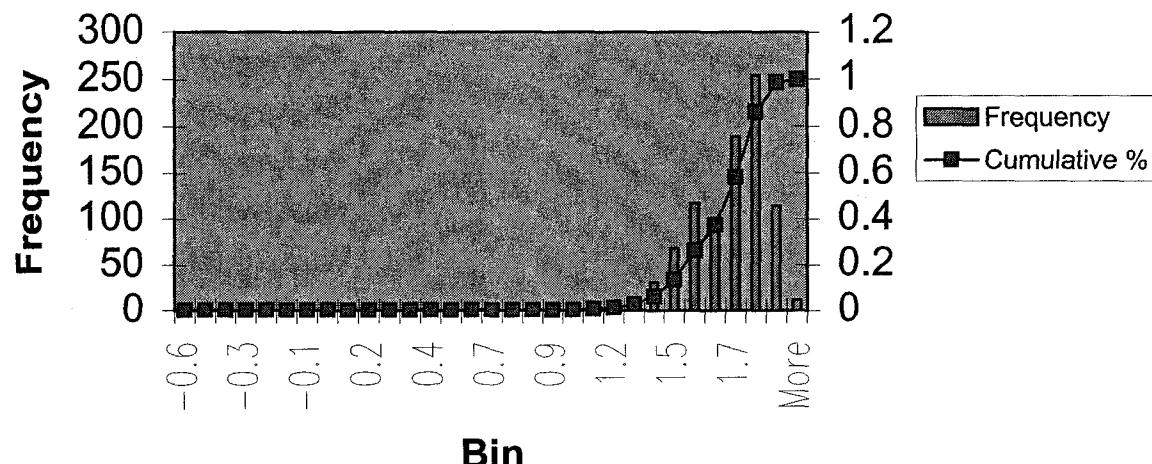
**Vanadium - Site-Specific
Expanded Metals Data Set
Log Transformed**

Mean	1.636569289
Standard Error	0.006408066
Median	1.681241237
Mode	1.491361694
Standard Deviation	0.193413238
Sample Variance	0.037408681
Kurtosis	40.03166942
Skewness	-4.102825627
Range	2.57054294
Minimum	-0.602059991
Maximum	1.968482949
Sum	1490.914622
Count	911
Largest(1)	1.968482949
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.012576317

Vanadium - Site-Specific Expanded Metals Data Set



Vanadium - Site-Specific Expanded Metals Data Set - Log Transformed



**Zinc - Site-Specific Expanded
Metals Data Set**

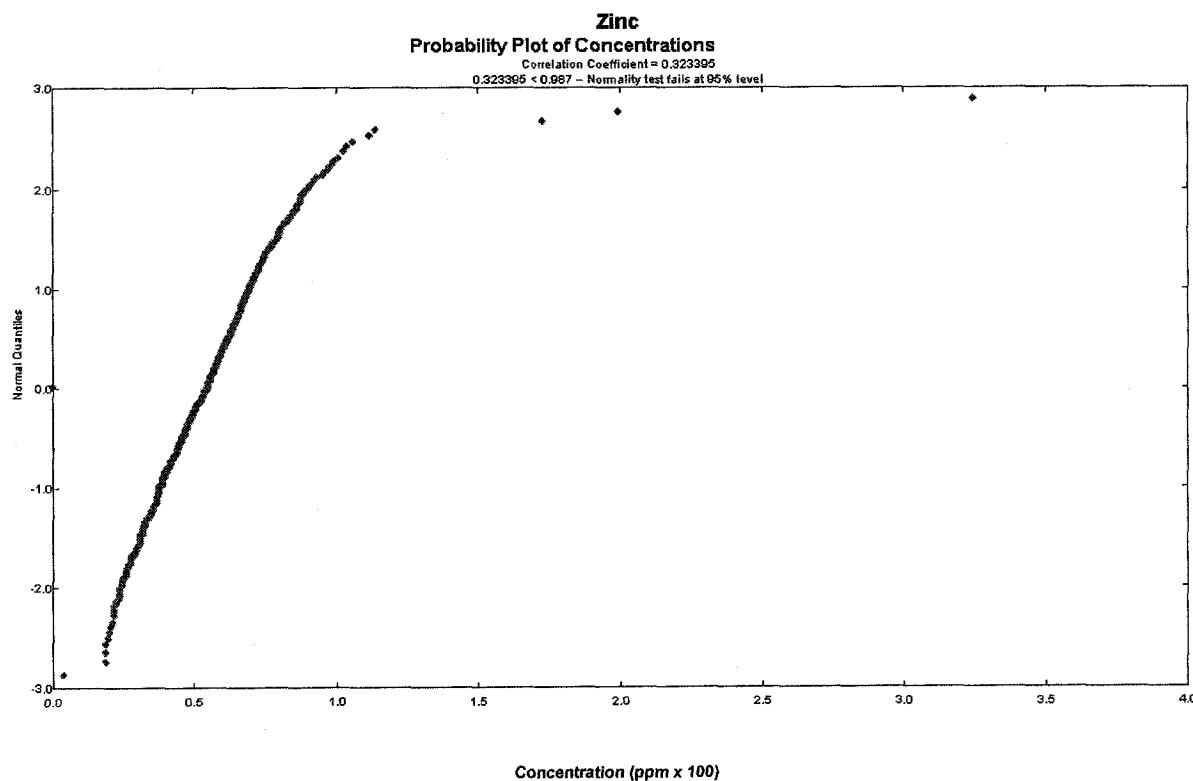
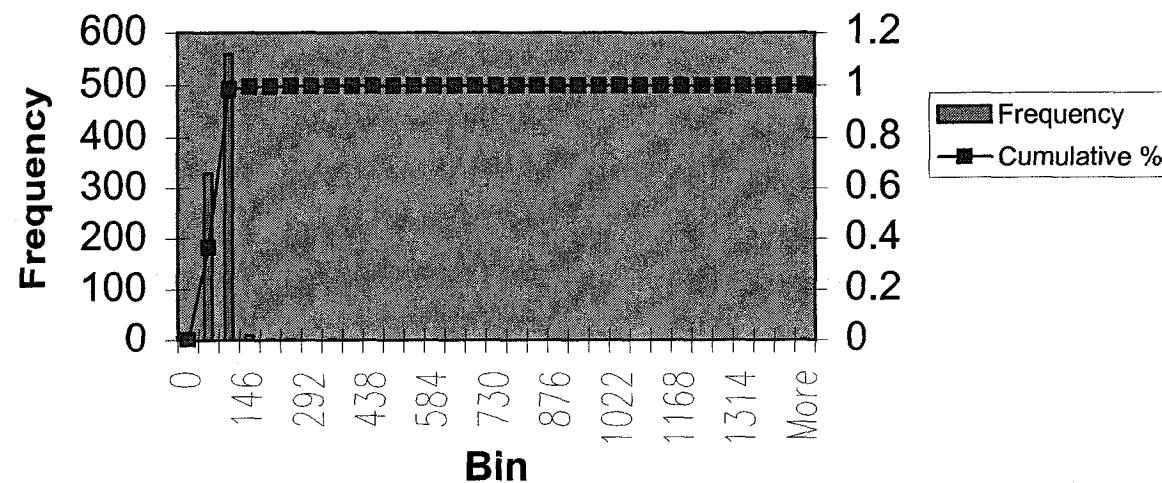
Mean	56.77447398
Standard Error	1.683549314
Median	55
Mode	47
Standard Deviation	50.59058684
Sample Variance	2559.407477
Kurtosis	658.5694394
Skewness	23.9093518
Range	1459.75
Minimum	0.25
Maximum	1460
Sum	51267.35
Count	903
Largest(1)	1460
Smallest(1)	0.25
Confidence Level(95.0%)	3.304131554

**Zinc - Site-Specific Expanded
Metals Data Set**

Log Transformed

Mean	1.718845033
Standard Error	0.005646279
Median	1.740362689
Mode	1.672097858
Standard Deviation	0.169670441
Sample Variance	0.028788059
Kurtosis	46.19367239
Skewness	-2.570578343
Range	3.766412847
Minimum	-0.602059991
Maximum	3.164352856
Sum	1552.117065
Count	903
Largest(1)	3.164352856
Smallest(1)	-0.602059991
Confidence Level(95.0%)	0.011081379

Zinc - Site-Specific Expanded Metals Data Set



Zinc - Site-Specific Expanded Metals Data Set - Log Transformed

